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ABSTRACT

This is a report of a model resource center for science and mathematics teachers which is committed to developing excellence in mathematics, science, and computer learning. Long-range goals of the center include: providing inservice workshops to 500 or more teachers per year on campus; an equivalent amount of instruction off-campus; to provide graduate instruction to 100 teachers per year; and to have more than a thousand teachers use the preview services of the center each year. Chapters included are: (1) "Introduction"; (2) "The Technology Center for Excellence" discussing materials collected including hardware, software, hardware for the handicapped, and curriculum library; (3) "Program Goals" describing the original proposal, status, and commentary of each of the programs; (4) "Project Design" outlining the administrative procedures; and (5) "National Significance" summarizing the significance of this project. Appendices include a proposal for the Center, the Master's program, workshop brochure, and evaluation forms. (Author/YP)

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A CENTER FOR ACADEMIC EXCELLENCE IN MATHEMATICS, SCIENCE, AND COMPUTER LEARNING

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FINAL REPORT

Submitted by

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January 1990

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ABSTRACT

This is a report on the establishment of the Educational Technology Center at Allentown College of St. Francis de Sales during the period of September 1988 to September 1989 under a grant from the Department of Education. The proposal was to establish a Center for Excellence in the teaching of mathematics, science, and computer learning.

The specific objectives for this project were:

1. To establish a resource center committed to developing excellence in mathematics, science, and computer learning.

2. To develop a series of workshops for teachers to improve their understanding of mathematics, science, and computer learning with a strong focus on the application of educational technology.

3. To identify and train secondary schoolteachers to be trainers of teachers and to provide instruction to other teacher both informally and through workshops.

4. To develop for replication a model of a comprehensive educational technology resource center which focuses on dissemination of research-based training.

The long-range goals for the Center were to provide inservice workshops to 500 or more teachers per year on campus, and an equivalent amount of instruction off campus; to provide graduate instruction to 100 teachers per year; and to have more than a thousand teachers use the preview services of the center each year. The federal funds were for start-up costs; the center itself was to become self-supporting through fees, tuition, and external funding.

The present status of the first year objectives is as follows:

1. The Educational Technology Center has been established and institutionalized as a component of the Trexler Library of Allentown College. The Center is an important resource for both the graduate and undergraduate components of the teacher education programs at the College.

2. Eleven workshops were offered during the first year (January 1988-January 1989) of operation of the Center, and other workshops are being planned for 1990-91. The goal of thirty to forty workshops per year by the end of the fifth year of operation of the Center should be reached.

3. A master's degree program, with a strong emphasis on technology and training of teachers-of-teachers has been approved. Fourteen teachers are enrolled and another seven applications are in progress.

4. The model proposed in the project proposal was adaptable to the present situation with only minor adjustments. All features -- Center, master's degree program and workshops -- have become part of the program of the College. The integration of the components suggests a model that could be replicated at other institutions.

The Center for Academic Excellence in Mathematics, Science, and Computer Learning at Allentown College of Saint Francis de Sales has been incorporated into the institution and is an accepted part of the academic program. It has had an immediate impact on some local K-12 schools, and the growth potential is excellent.

I. INTRODUCTION

A. The Grant

In the summer of 1988, Allentown College of Saint Francis de Sales was awarded a grant from the U.S. Department of Education for a technology center for excellence in the teaching of mathematics, science, and computer learning. The center was to develop a comprehensive program involving graduate degrees, applications of technology, training of trainers, and curriculum development. Funding was requested for (1) a hardware collection, (2) a software collection, (3) a depository of adaptive hardware for the handicapped, and (4) a curriculum library. This is a report on the first year of operation of the Center.

The long-range goals for the Center were to provide inservice workshops to 500 or more teachers per year on campus, and an equivalent amount of instruction off campus; to provide graduate instruction to 100 teachers per year; and to have more than a thousand teachers use the preview services of the center each year. The federal funds were for start-up costs; the center itself was to become self-supporting through fees and tuition. Supplemental funding was to be sought from venders, foundations, and individuals, as needed, to meet expansion and appropriate ancillary projects. Teachers from the metropolitan Philadelphia area, southeastern Pennsylvania, and northern New Jersey were served by the center.

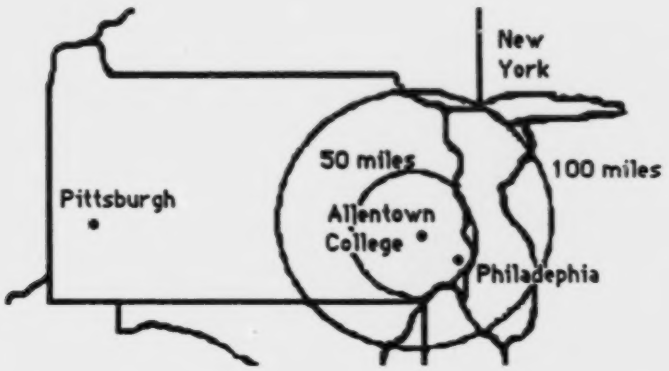

Figure 1: Location of Allentown College of Saint Francis de Sales

A copy of the original proposal can be found in Appendix A.

B. Allentown College of Saint Francis de Sales

Allentown College is a coeducational, Catholic liberal arts college located on a lovely, rolling 325-acre campus in Center Valley, Pennsylvania. It was founded in 1965 by the Oblates of Saint Francis de Sales, a religious order with more than a century of commitment to education.

The student body numbers about 950 day students and 800 evening students. The College has grown to its planned enrollment size, and is now focusing on the strengthening of its liberal arts program with selected professional programs in keeping with its mission. The graduate program in Education, which was supported by this grant, is the most recent area chosen for development. The graduate program is primarily a summer school program with graduate level workshops conducted weekends and evenings year round. The preview center is available evenings and weekends throughout the year.

II. THE TECHNOLOGY CENTER FOR EXCELLENCE

The major portion of the funding of this grant was to provide the resources to establish a model educational technology center. The principal components are shown in Figure 2. Although the general concept of the Center is that each of the components is part of an integrated system, each component will be reported upon separately, first with a description of the component taken from the original proposal, followed by a report on the present status, and finally with a commentary.

A. Hardware Collection

Original Proposal: Central to this proposal was the development of an educational technology center which would provide teachers of the region with access to the high-technology hardware -- computers, disk drives, printers, interactive video, adaptive hardware for the handicapped, robots, etc. -- that is available for use in the K-12 setting. Workstations were to be available at the center to demonstrate to visitors the latest innovations and to provide the equipment necessary to conduct an instructional program of graduate courses and workshops.

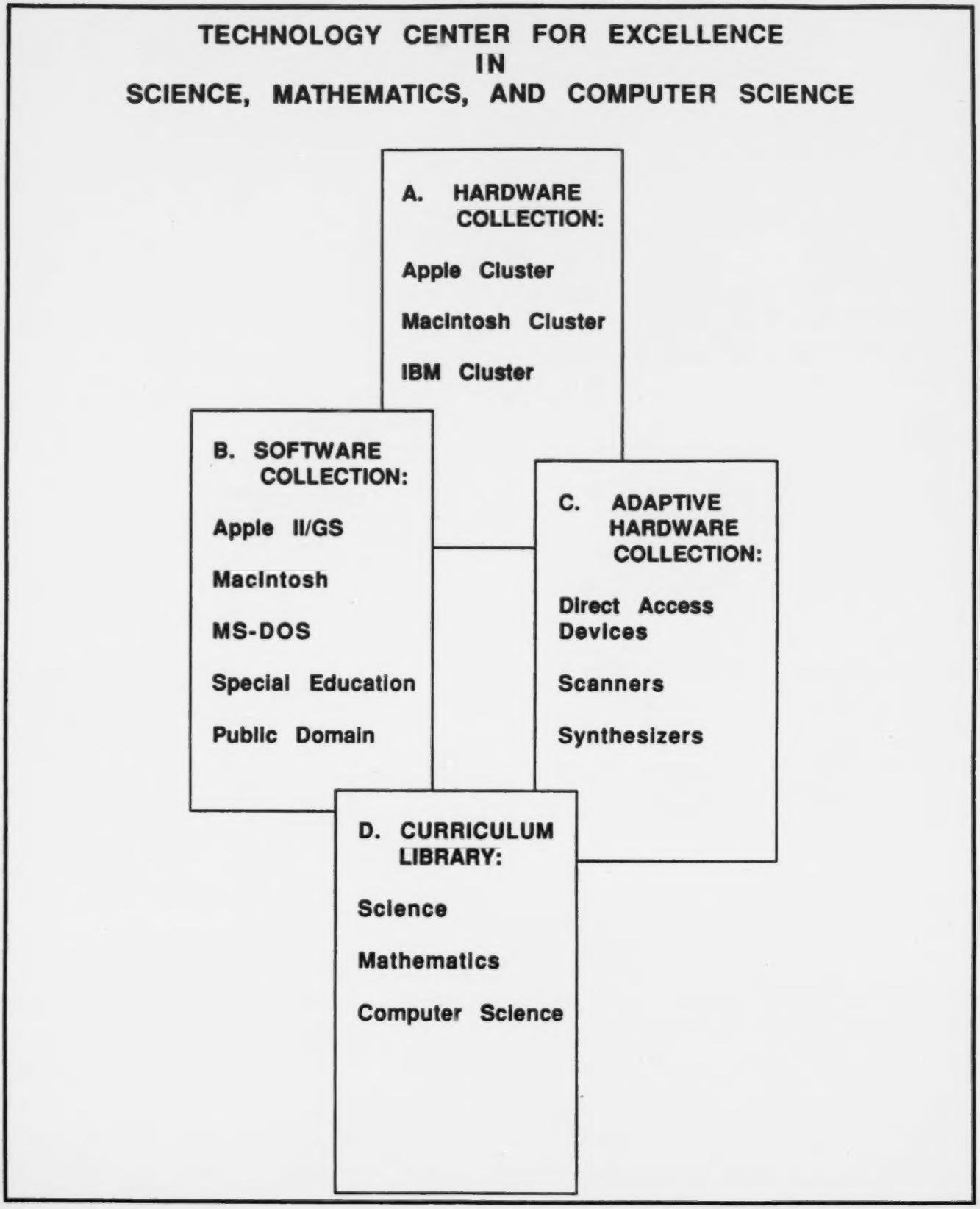

Figure 2: Master Plan

The laboratory was to contain clusters of Apple GS's, MacIntosh's, and IBM's in sufficient number to offer hands-on workshops. More significant than the computers themselves should be the accessibility of peripheral devices -- speech synthesizers, card readers, scanners, adaptive hardware for the handicapped, etc. -- which extend and expand the utility of the computer for special purposes and special people. The center was to be opened to all adults, and children accompanied by an adults. The center was be designed for teachers, and access was be provided to the physically handicapped and elderly who are interested in determining the utility of a computer or a peripheral for their particular needs.

Tuition and fees associated with courses and workshops were to consider the life expectancy of hardware and software so that replacement and upgrading could be done in a timely manner without dependency on external funding.

Status: The Center has been established and has been functioning for the past twelve months. It is located in a thirty-two hundred square feet area of the Trexler Library. The Center has four rooms: preview center (Figures 3 and 4), classroom, workshop room, and storage area. The actual space is triple that envisioned at the time of the original proposal. The area is available for use ninety hours per week.

The hardware collection exceeds that described in the original proposal. Thirty workstations are operational, and other hardware is available for short-term use during classes, workshops, and seminars. The configuration of equipment is not quite what was original proposed because the equipment budget in the original proposal was reduced by the Department of Education about forty-thousand dollars and the short fall was made up by additional contributions from the College and contributions from other sources.

The Center continues to add to its hardware collection through the use of College funds, from revenues generated by programs (see below), and by soliciting from outside agencies. Maintenance of equipment is funded through the inservice program (see below).

Commentary: The objectives related to the establishment of the Center have been met and exceeded in every aspect. The opening of the Trexler Library on campus, and the availability of several under-used rooms, made it possible to place the Center in an ideal, central location. The placement of the Center in the library has made it possible to use the many support services of the library in the daily activities of the Center. The Center has become an integral part of the library, and its institutionalization is assured.

Figure 3:Educational Technology Center: Public Area of Preview Center

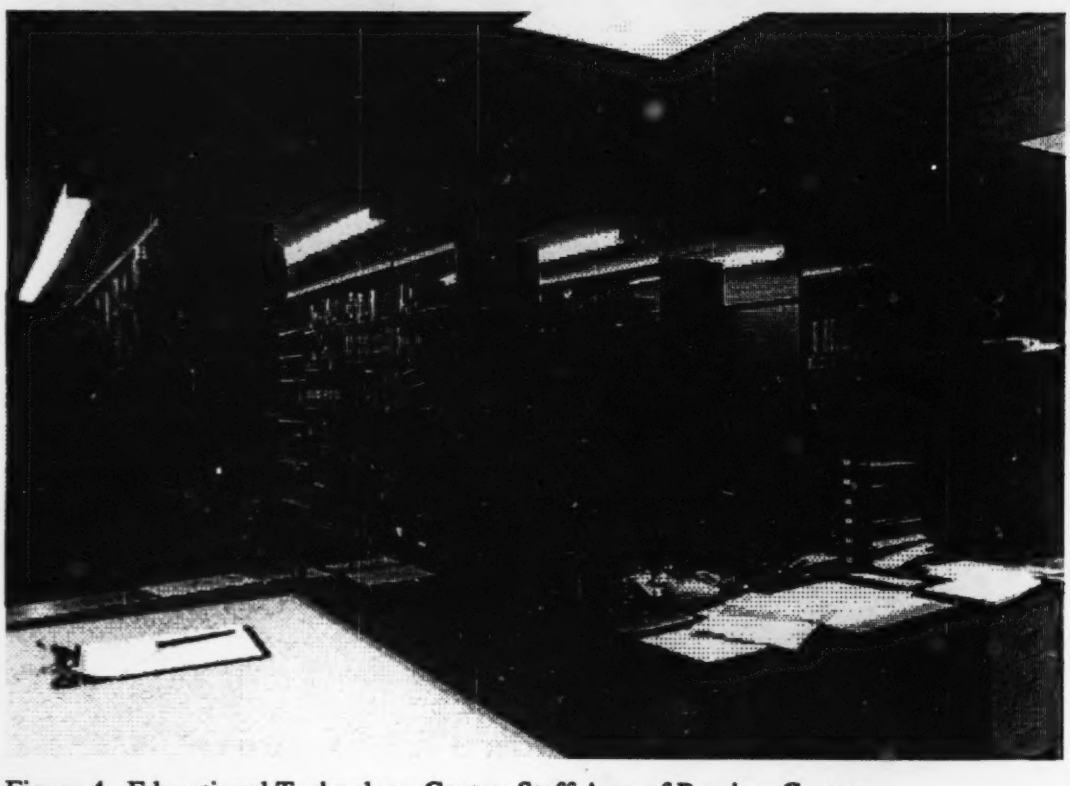

Figure 4: Educational Technology Center: Staff Area of Preview Center

B. Software Collection

Original Proposal: The Center was to have a software collection for preview and evaluation. The Center would be open about sixty hours per week, and it would operate as a reserve room operates in a library. All software would be restricted to the Center, and copying would be limited to a public domain collection.

The center's software collection would focus on software in the areas of mathematics, science, and computer learning, and the collection would be catalogued according to topics specific to the content areas. A cataloging system that would simplify finding appropriate software for specific topics and uses was to be developed.

A workshop was be developed for each of the academic areas of special interest to the Center -- Chemistry, Biology, Physics, Mathematics, etc. -- and the software collection would be the source of demonstration and preview software. The software collection was to include software specifically developed for the physically handicapped.

Status: The Center is open ninety hours per week as compared to the original sixty hours that was proposed. This was done by the locating of the Center in the library. The integration of the Center into the library has permitted the sharing of personnel which has been cost effective.

The software collection has over a thousand disks in the commercial collection and several thousand programs in the public domain collections -- Apple, Macintosh and IBM-compatibles. A prototype cataloging system has been prepared for the mathematics programs in the collection, but catalogs for the other areas has been delayed until sufficient trained help can be obtained.

Eleven workshops were develop and taught during the first year of operation of the Center (January 1989 - January 1990); at least four more will be taught during the spring semester of 1990 and others are pending.

During the fall semester of 1989, the Center checked out an average of forty items per day for in-center use. The actual use of the Center was probably twice this number because many students provide their own software and frequently students work in groups.

Commentary: This part of the project has been moderately successful. Developing a software collection is a time-consuming operation. The process is proceeding at a reasonable rate, but implementation of certain parts of the program will be contingent upon identifying knowledgeable instructors.

C. Adaptive Hardware for the Handicapped Collection

Original Proposal: Part of the preview center was to be a collection or depository of adaptive hardware for providing access to technology for the physically handicapped. One purpose of the equipment was to make people who had limited contact with the physically handicapped more aware of their problems and the potential that technology affords. All workshop developers at Allentown College were to be encouraged to devote some part of their workshop to the use of adaptive hardware.

Status: The center has two workstations permanently outfitted with adaptive hardware, and a third which can be made operational and demonstrated on short notice.

The software depository of materials specifically designed for the physically handicapped has not been started.

Commentart: This part of the project has been very slow to develop. Without a person specifically trained in this area, selecting, configuring, and demonstrating equipment has been hampered. Two grant proposals were submitted during the year for additional funding for demonstration and training of physically handicapped individuals, but they were not funded.

The development of this aspect of the Center is a high priority. Other aspects of the project related to institutionalization have demanded the attention of the director during the start-up period, but more resources will be committed to this feature of the Center in the next year.

D. Curriculum Library

Original Proposal: In conjunction with the technology center and the graduate program, the College library was to develop a curriculum library with an emphasis on mathematics, the sciences, and computer learning.

Status: Locating the Center in the library has allowed us to physically integrate the curriculum library into the Center. On-going funding of the curriculum library will be part of the regular library budget process.

Commentary: Having the curriculum library in the same room as the hardware and software was another bonus in the development of the project resulting from locating it in the library. In addition, the curriculum library materials, as well as all instructional materials, are being incorporated into the library cataloging system which will make them accessible to all users of the library. All materials will eventually be part of the computerized library catalog which will be accessible on-line from any location with modem access.

III. PROGRAM GOALS

The proposed center was to integrate various components of the program so the College would be able to meet the needs of a large number of teachers. Initially the Center was to provide inservice opportunities to teachers throughout the region. Use of the Center by the regular student body of Allentown College (especially those in Mathematics, Chemistry, and Biology secondary teacher certification programs) was to be encouraged, provided their use of the Center did not interfere with the inservice priorities.

A graduate program, to be developed as part of the project was to provide a pool of experienced teachers to staff much of the inservice program and to develop demonstrations and informal learning experiences. Although the College staff was to offer the first workshops, their primary role was to aid in the development of workshops, to provide training in subject matter, and to ensure that their students are knowledgeable in the latest technologies.

The goals for the first year of the proposed project are summarized in Figure 5, and Figure 6 shows the goals for the first five years. The following narrative describes the major characteristics of each of the components, and their present status, and concludes with a commentary.

A. Master's Degree Program

Original Proposal: The technology center was to be the major resource for the master's degree program being developed at Allentown College. It was expected that the program would be unique in several ways.

FIRST YEAR GOALS
for
TECHNOLOGY CENTER FOR EXCELLENCE

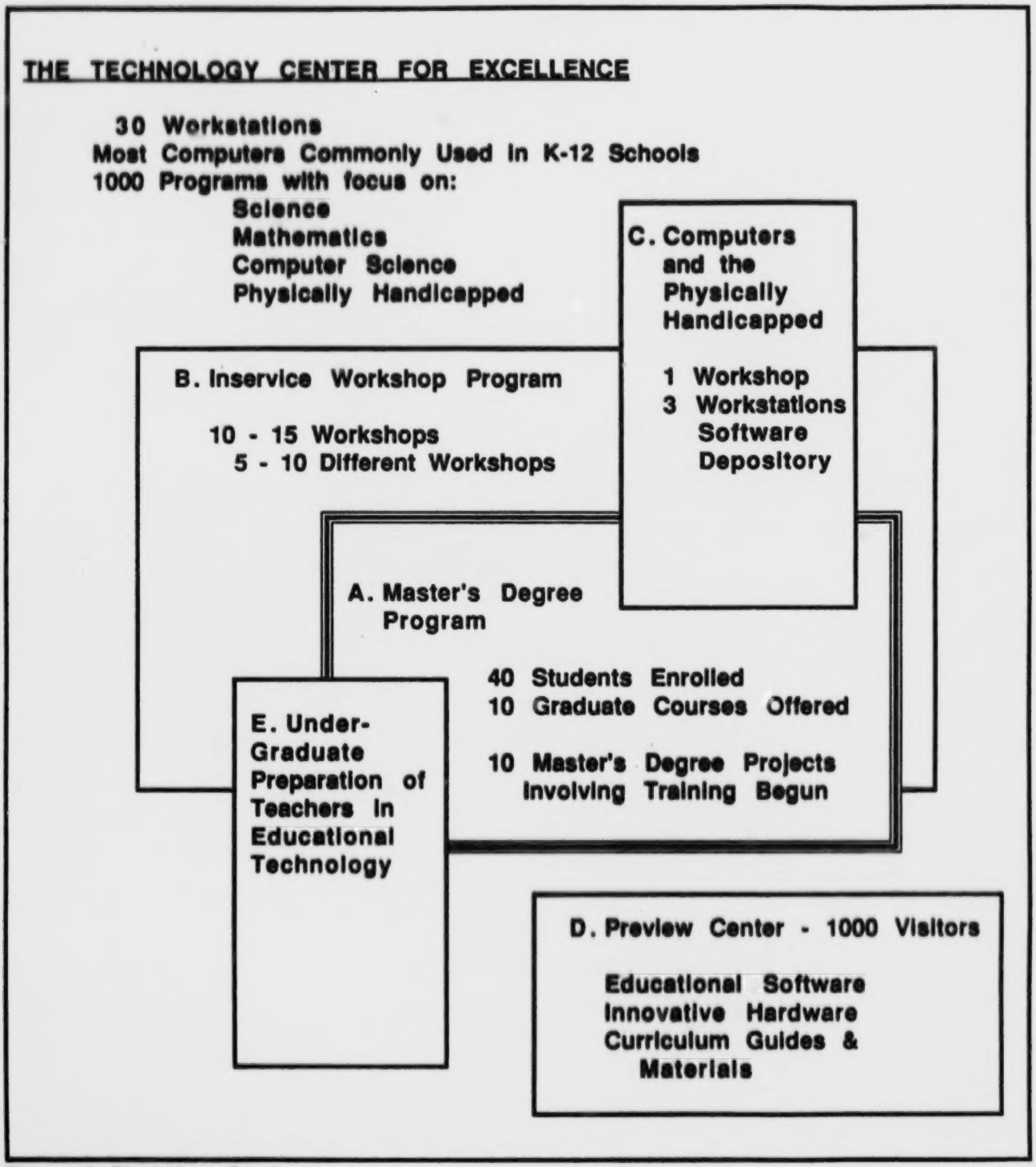

Figure 5: First Year Goals

FIVE YEAR GOALS
for
TECHNOLOGY CENTER FOR EXCELLENCE

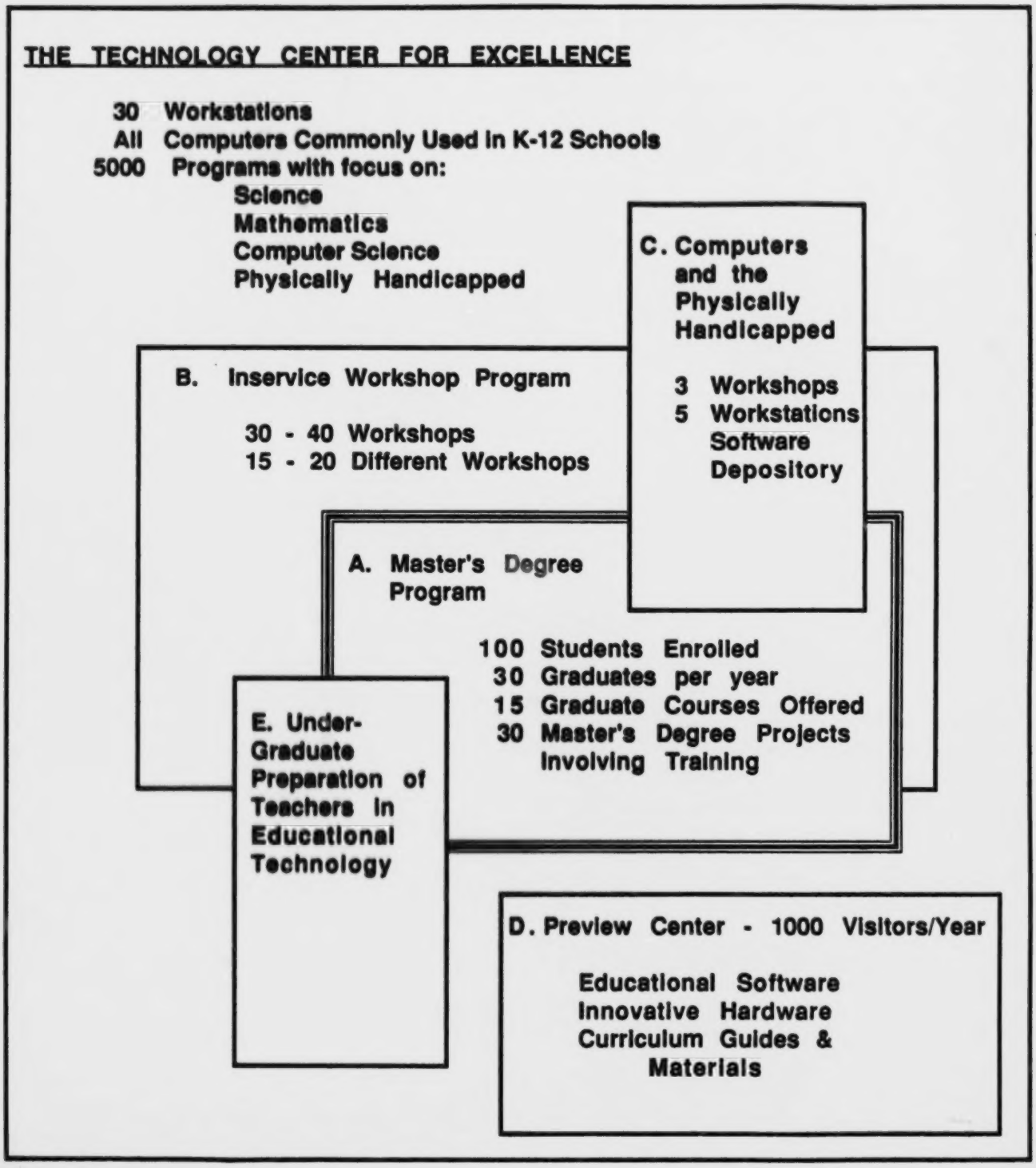

Figure 6: Five Year Goals

First, although the graduate degree was to be in education, the program would have as one of its four components a content-knowledge base corresponding to a discipline in the K-12 environment. Wherever possible, the content courses would make use of the technology that is available at the Center.

Second, the education component of the program would focus on the research base for instruction and the use of technology for the acquisition of information. Students would be taught analytical skills for the diagnosis of research. In a curriculum course, students would be made aware of the various approaches to curriculum development.

Third, technology would be an overriding theme of the program. All participants would take a course in technological applications in education which would include word processing, database management, spreadsheets, database searching, presentation software, desktop publishing, interactive video, etc. These same skills would be utilized as needed throughout the curriculum.

Fourth, a component of the graduate program would be the inclusion of a required course in "training" in which participants would be introduced to the research on adult learners and taught skills for working with adults and designing instructional programs for teachers. It was anticipated that many of the master's degree projects would be to develop instructional programs for other teachers, including science and mathematic instruction for elementary schoolteachers. Alternatives to workshops, interactive video, CAI, etc., would also be considered for providing inservice.

Status: As part of developing a rationale to be presented to the College faculty, the Board of Trustees, and the Pennsylvania Department of Education, a needs assessment was done in late 1988. All high school and junior high school principals (n= 196) within a fifty-mile radius of Allentown College were contacted for a telephone survey. Eighty-six percent (166) completed the survey.

The overwhelming majority of the principals indicated that a graduate programs in the areas of Mathematics, Computer Education, Computer Science, Chemistry, and English offered at Allentown College would be useful to their teachers. See Figure 7.

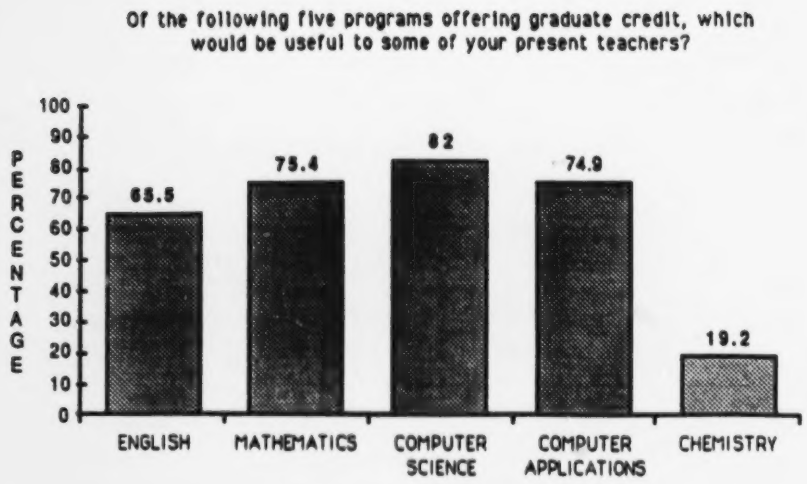

Figure 7: Interest in Graduate Courses for Present Staff

The graduate program proposed has been approved by the College faculty, the Board of Trustees, and the Pennsylvania Department of Education. The first students were admitted for the summer session of 1989. As approved by the state of Pennsylvania, there are five graduate programs in the areas of Chemistry, Computer Science, Computers in Education, Mathematics, and English. The later was not originally part of the project, but was incorporated into the approval process at the request of the faculty and at no cost to the grant.

A copy of the proposal submitted to the Pennsylvania Department of Education in preparation for their site evaluation visit can be found in Appendix B. At the present time their are fourteen teachers in the program, and nine applications are being processed. An additional one-hundred-and-twenty-seven teachers have requested applications.

The approved program is very close to the guidelines proposed in the funding proposal. If there is any deviation it would be that the course in "training" is an elective instead of a required course.

Commentary: Considering the number of groups and agencies involved in the program approval process, it is surprising that the final course of studies is so close to that originally proposed. The program is in place; the College is committed. A copy of the Graduate Bulletin, which includes a description of the master's degree programs, can be found in Appendix C.

The original timeline for the approval process proved to be unrealistic. It had not been expected that the Pennsylvania Department of Education would call for a full academic review and on-site evaluation team visit before granting approval. The lengthy review process meant that the program could not be publicized until early May 1989. This allowed only six weeks for recruitment of students for the 1989 summer session. Fourteen students were enrolled, and three courses and nine workshops were given during the summer. The number of courses and workshops is expected to double in 1990, and the total enrollment of students should quadruple.

In retrospect, a more reasonable timeline for program approval would have been two years, not nine months. In many ways, the 1990 summer session will mark the beginning of the graduate program. If the 1990 summer session is as successful as current interest would show, two or three more graduate programs will be considered for the summer of 1991, including one in Biology.

B. Inservice Workshop Program

Original Proposal: An objective of the center was to develop a series of workshops in each of the three subject matter areas -- mathematics, science, and computer learning. Initially, workshops were to be developed and offered by the present College faculty, but as the master's degree program was developed, a cadre of teachers would emerge to serve as the instructors.

The inservice workshops to be developed through the Center were not to be limited to computer education, nor would they be restricted to on-campus offerings. Graduate students were to be encouraged to develop workshops that could be taught in their own school districts, providing both content and methodology useful in addressing the needs of their students. The most significant impact of the total program would be in its ability to provide trainers to local school districts to serve as curriculum specialists and consultants in the areas of mathematics, science, and computer learning.

Status: In the survey done in December 1988, principals were asked about training needs. In response to a series of questions about the more specific interest of high schoolteachers in computer/technology related programs, there was an expression of very high interest in most areas. See Figure 8.

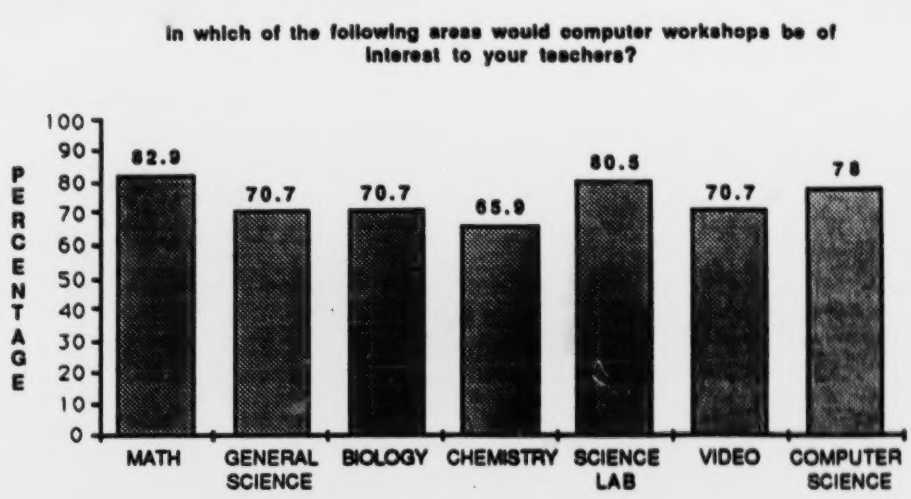

Figure 8: Interest in Technology Workshops for Staff - High School

These data, plus other information gotten from more opened-ended questions, lead to the conclusion there is a need for more opportunities for graduate education programs in the area, and that Allentown College could develop such a program with expectations of success.

In the summer of 1989, eighteen two-day workshops were offered for teachers. The following nine workshops were conducted:

CH 561	Teaching Chemistry with Large Scale Models
CH 563	Chemistry for Elementary and Middle School Teachers: Part II
CS 562	The Macintosh as a Tool for Teachers
CS 563	An Introduction to the IBM Computer - the MS-DOS Environment
CS 564	Introduction to LOTUS 1-2-3
CS 565	Desktop Publishing
EN 560	Teaching Writing Across the Curriculum
MA 560	Teaching Secondary Mathematics with Microcomputers
MA 561	Teaching Probability and Statistics in Secondary School

Descriptions of the workshops can be found in the brochure used to advertise the workshops in Appendix D. During the fall of 1989, two additional workshops were offered. Eleven workshops are being offered in the spring semester 1990, at the present time four of these workshops have enough enrollment to be conducted.

Commentary: The project did meet its goal for number of workshops during the first year (See Figure 5). However, the enrollment in the workshop program has not been as great as was expected. There are several factors which may be influencing the enrollment.

One important factor in the workshops enrollments is the cost. The grant supplied only some start-up costs, not tuition or instructors salaries. The program needs to be tuition driven if it was going to be institutionalized. Many teachers in the area have access to tuition-free or low-cost workshops which compete with the program. This semester the College has reduced its fee from $200 to $150 per workshop. The setting of a workshop fee is difficult because each district in the fifty-mile radius of the College has it own tuition reimbursement policy for teachers. One problem is that the tuition must also consider the cost of maintenance and replacement of software and hardware. Inservice offered by some public colleges and universities, as well as local school agencies, use hardware and software that has been bought for other uses or is considered part of their fixed expenses.

Another factor that influences enrollment is the need to identify areas of interest of teachers. Although an extensive needs assessment was done to establish interest in workshop offerings as part of the preparation of the master's degree proposal, the survey did not identify specific courses or workshops. As we conduct less formal needs assessments with the participants in our workshops, it is becoming clearer what topics are more viable. Besides identifying needs, instructors must be identified who are willing to commit themselves to developing the instructional programs.

Also, establishing credibility for a new program requires time. Evaluations of our workshops have been very good. Seventy-eight percent of the participants have rated the workshops they attended as "excellent"; the other twenty-two percent gave them "good" ratings. The evaluation form used for the workshops is in Appendix E as part of the interim report made to the project advisory committee in August 1989.

It is expected that workshop attendance will grow as they are successfully reported by participants to colleagues. Not only were the workshops well received, but the instructors were uniformly rated as excellent. Ninety-six percent of the overall instructors' ratings were "excellent" (Appendix E). All the instructors were experienced and for the most part had offered the same or similar workshops in the past. The acceptance of our workshops and instructors has set a high standard for the program in the future.

Our original proposal did <u>not</u> consider the fact that our new graduate students would not begin to prepare workshops until their second or third year into the program. These students will form the cadre of instructors that we will need for the long-range development of the workshop program. They will make it possible to offer the highly specialized workshops that teachers are looking for, instead of the generic offerings

presently available. It will be two to three years before these workshops will be ready. The five-year goal (6) of thirty to forty workshops per year still appears to be a reasonable goal.

At the present time, about fifty percent of the workshops offered are conducted. Experience would say an ideal inservice program would have an eighty percent of the workshops offered being conducted. More than eighty percent might mean there is more of an audience than anticipated, less than eighty percent would show that the client needs are being met through other means or the workshops are inappropriate. Over the long run, better needs assessments will be conducted to ensure the supply and demand for workshops comes into better alignment.

Although the proposal was for a grant and not a contract, it was anticipated that products would be developed in conjunction with the delivery of services to teachers. Each educator who develops a workshop for the center is to author a workshop teacher's guide. Each guide will include a course outline, schedule of events, audiovisual materials, handouts, sample programs, and other materials to assist another instructor in conducting the workshop. These guides will be placed in the public domain and disseminated to interested educators either directly or through the ERIC system.

The original funding request included honoraria for the preparation of workshop guidebooks by faculty members who were to teach the first series of workshops. In the negotiation of the project budget with the Department of Education, the original funding request for $125,000 was reduced to $83,100. One of the items that was not funded was the development of guides the original set of workshops. Our intent is to have guidebooks prepared as projects by the master's degree students. The first guidebooks should be produced in the summer of 1991 when the initial group of graduate students complete their programs.

C. Computers and the Physically Handicapped

Original Proposal: The proposed center would include a depository of adaptive equipment for use of handicapped students to bring attention to this application of technology to all those who use the center.

Status: As noted earlier, three workstations are available for demonstrating special adaptive devices for the physically handicapped. External funding is being sought to increase the available materials and to provide for the training of trainers.

Commentary: Although this is a priority for the Center, during the first fifteen months of the project it was necessary to focus on the primary goals of establishing and managing the Center. The extended approval process for the master's degree program, a component essential for institutionalization of the Center, left little time for the development of the depository and related instructional program.

D. Preview Center

Original Proposal: The center was to serve as a preview location for current software. Teachers in the public schools who are responsible for choosing software are still limited in access to current materials. The center was to collect software available in mathematics, science, and computer learning. Some additional software would be included, should it be made available from venders. Any teacher coming to the center should be able to see the best software that is of interest in his or her subject area.

A major project for the center staff would be to prepare a cataloging system that would facilitate the location of software on specific topics within a discipline. Ultimately, a good cataloging system should include not only a means of finding the software, but also have a database of evaluations to help teachers in picking the actual software they would like to preview.

Status: Although the Center is an active site, most of the activity centers on the formal instructional program of courses and workshops. Very few teachers visit the Center to preview software.

Commentary: The original proposal may have overestimated the need for the previewing of software. It may be that other agencies, such as the regional technology centers supported by the state of Pennsylvania, are providing access to software for preview and evaluation. But, it may be that individual teachers are not interested in new software because they are not part of the selection process in their districts. Some local districts, for example, are members of the Minnesota Educational Computing Cooperative (MECC), and software purchases are almost restricted to MECC materials.

Another possibility is that the Center's services are not well-known in the local educational community. As the inservice and graduate programs grow, teachers will become more aware of the availability of the resource. It has been suggested that copies of the Center's catalog might be distributed to local school districts and a newsletter containing

information about available software be distributed. These activities will be considered.

The development of the software collection has not been a wasted effort. It would have been impossible to offer the graduate courses and the workshops without the materials. The materials are becoming a major component of our undergraduate method courses as well (see below).

E. Undergraduate Preparation of Teachers in Educational Technology

Original Proposal: The availability of hardware and software in the Center at Allentown College should provide a distinct quality to the undergraduate teacher certification program of the College's Education Department. Practical experience in educational technology was to be in each course in the preservice program.

Status: Although our undergraduate students preparing to become teachers previously had some experience with the educational technology, because of the availability of the Center, educational technology has now become a major component of all courses.

Commentary: Educational technology is becoming a hallmark of our undergraduate certification program. Our faculty has raised its expectations for student awareness and use of all phases of the technology -- word processing, data bases, CAI, material production, etc. Although this is an across-the-board phenomenon and affects the slightly more than one hundred teachers in our certification program, it is noteworthy that more than thirty percent of these teachers are preparing to teach science or mathematics at the high school level, which is almost a justification for the Center on its own right. The long-range impact of this part of the program may be more significant than the other training components.

It addition to the utilization of computers in our methods courses, there is increasing interest on campus in using the Center as part of our overall educational program. This approach is being nurtured by the Center staff because the best way to prepare our future teachers in the use of the technology is to have them use it in their own education.

All faculty and staff are encouraged to become familiar with the educational resources of the Center. A two-day workshop for college faculty is being planned for the spring of 1990.

IV PROJECT DESIGN

A. Administration

a. Director

The administration of the educational technology center and the related master's degree program is the responsibility of Dr. Pat McIntyre, the Chair of the Education Department, who reports to Dr. Karen Doyle Walton, the Academic Dean. During the period of the funded portion of the project, Dr. McIntyre was assigned half-time to the project. His major responsibilities were to obtain approval for the master's degree program(s) and to establish the educational technology center. During the start-up period, Dr. McIntyre also assumed the role of inservice coordinator.

Now that the programs and the Center are functional, one-quarter of Dr. McIntyre's time is assigned to being Director of the Graduate Programs in Education and Director of the Educational Technology Center. This is consistent with the original proposal.

The following is Dr. McIntyre's job description relevant to being Director of the Center:

1. Oversee the daily operation of the Educational Technology Center.
2. Prepare funding requests and budget.
3. Chair the Center Advisory Board.
4. Oversee hiring of Center staff.
5. Approve purchase of hardware and software.
6. Recommend workshops and instructors to graduate program coordinators and the Vice President of Academic Affairs.
7. In cooperation with director of library, supervise Center staff.
8. Approve all promotions and publicity about the Center.
9. Prepare workshop guides and manuals.

At some point, the position of Director of the Center will probably separated from the Director of Graduate Programs. Depending on the client groups being served by the Center at that time, this person would report to the Director of Graduate Programs or to the Librarian. For the immediate future, the position will be tied to the graduate program even though the Center serves more than the graduate students.

b. Manager/Inservice Coordinator:

During the first nine months of the operation of the Center (January 1989-August 1989), the Center had a half-time manager. The position was combined with that of the

inservice coordinator beginning in September 1989. The position is funded through the library budget, and the individual reports to both the Director of the Center and the Director of the Library.

The manager/inservice coordinator has the following responsibilities:

1. To implement all policies and procedures developed by the Director and the Center Advisory Committee.
2. To plan, implement, and manage a program of inservice education to meet the needs of various client groups.
3. To coordinate the inservice activities of the center with the various college offices (Registrar, Continuing Education, Library, etc.)
4. To publicize and promote the activities of the Center.
5. To promote the development of new courses, workshops, and activities for the Center.
6. To maintain records of contracts, syllabi, resumes, and course evaluations for the inservice program.
7. To assist in the preparation of contracts, validation of services, and oversee payroll of inservice staff.
8. To supervise work study students and library staff who are assigned to work in the Center.
9. To provide direction, training, and supervision for the Center staff.
10. To maintain software and hardware inventories of the Center.
11. To develop and maintain the Center's mailing list.
12. To maintain a calendar for room reservations for the Center, the presentation room, and the audiovisual production rooms of the library.
13. To assist the Director of the Center in the solicitation of hardware and software for the Center.
14. To provide service to the many users of the Center.
15. To prepare recommendation for hardware and software acquisitions for the Center Director.
16. To maintain records of Center use.
17. To develop a staff handbook on policies, procedures, and staff training.
18. To maintain the hardware collection through developing a regular schedule of preventive maintenance.
19. To develop and maintain a schedule for general housekeeping of the facility.

The manager/inservice coordinator supervises two student workers and eleven work study students. It is expected that as the program grows, the inservice component will be split off and become a separate position.

c. Program Coordinators

The original proposal called for a single graduate program with "strands" for each of the academic areas. Following Pennsylvania Department of Education policy, each of

the strands was converted into a separate master's degree program all of which are administered under the director of graduate education programs. This organizational arrangement places more responsibility for the individual programs in the academic departments instead of in the Education Department.

Each of the departments offering a master's of education degree has a program coordinator who serves on the Admissions and Academic Standards Committee for graduate education programs. The committee is to exercise oversight of the department's graduate program and to admit qualified students. The responsibilities of the committee are to:

1. Review applications of those seeking admission to the graduate program.
2. Admit applicants who meet the standards set by the Committee and by the Graduate Council.
3. Recommend changes in admissions criteria and procedures to the faculty of the Department. The Department then submits these with its own recommendations to the Graduate Council.
4. Conduct an annual evaluation of the graduate program «to assure and enhance» its quality.
5. Review the graduate curriculum as indicated by evaluations and by changes in the profession that the program is intended to serve.
6. Make recommendations for graduate elective courses to those faculty who teach in the graduate program.
    a. Submit courses to Vice President for Academic Affairs for approval.
    b. Circulate to other graduate programs in the College as information.
7. Make recommendations for library acquisitions and notify other graduate programs.
8. Cooperate with faculty of other graduate programs in the College in developing graduate courses that are mutually beneficial.
9. Review annually academic policies and procedures and recommend any needed changes to the programs faculties. Recommend changes in academic policies and procedures to the Graduate Council. The Council in turns submits these with its own recommendation to the Vice President for Academic Affairs and the President for approval.
10. Review requests from students who want waivers of the academic policies set by the Committee. Actions on these requests shall be sent to the Vice President for Academic Affairs for his approval. The Vice President may seek an advisory opinion from the Graduate Council.

d. Advisory Board

The project advisory board will continue to function although the funding period has been passed. The advisory board has met at six-month intervals and serves as a sounding board for the Center staff. The actual decision-making functions, critical to the operation of the Center and the related programs, comes under the purview of the standing

committees of the College and its administrative staff.

The board, however, has served a special function in providing access to information and advice to the project staff when it was needed. Their detailed knowledge of the Center and its operation has made members of the board valuable consultants and supporters of the program.

B. Schedule

The time lines set in the original proposal were based on the assumption that grants would be awarded in August 1988 and the funding period would be from January 1989 to January 1990. In fact, the funding began in September 1988 and extended through September 1989.

The lack of a preparation period before the actual funding period meant that certain tasks had to be re-scheduled. This did not impact the overall goals and objectives of the project, but it meant that certain activities were not started until after the funding period ended.

In addition, some time estimates were not realistic. The approval process for the master's degree program took five months longer than anticipated. Without approval for the graduate program, workshops could not be offered during the fall or spring semester of the 1988-89 school year, and only six weeks was available for formal promotion of the summer school program of 1989.

C. Evaluation

To get an independent assessment of the center, an Evaluation Team of three knowledgeable educators were asked to visit the center three months into the funding period, and again after twelve months. The Evaluation Team prepared a written report about the progress of the project in meeting its objectives and made recommendations for future developments. The Evaluation Team was established with the help of the Pennsylvania Department of Education. The evaluation would be formative instead of summative because the center would be an ongoing operation beyond the grant period. The evaluation would help provide an objective outside prospective, and may be of value to other colleges planning the establishment of a technology center.

The two visits from the Evaluation Team were very successful. The team was very supportive of the project and provided excellent feedback and suggestions to the staff. The reports are in Appendix F.

The primary function of the Center was to provide service to teachers and school districts interested in improving their instructional programs in mathematics, science, and computer learning, with a focus on the application of technology. With that in mind, the evaluation of the Center was to be done by surveying the users of the facility.

Any teacher who uses the Center was to complete a short, on-site evaluation and to register his/her name and address. On a biannual basis, a mailing was to be made to all center users to determine how the use of the Center has affected their classroom or other professional activities, and to get from them suggestions for improvement in the services supplied. It is the responsibility of the Director to conduct the survey and report the results to the Advisory Board. The first survey was to be conducted after the Center had been in operation for six months. This aspect of the evaluation was not done. The small number of teachers who used the Center meant that little could be accomplished from this activity.

Plans are being developed for supplying more information to teachers in the area about the Center, and in time, a program for evaluating the Center, based on user input, will be implemented. All participants in courses and workshops and visitors to the center will be asked to complete an evaluation form. Their names will be placed on a mailing list which will be used biannually to get feedback and recommendations about services.

D. Institutionalization

Allentown College is already committed to most, if not all, of the activities that were proposed in the grant request. Building on its experience with previous grants for workshops and curriculum development projects, the College has recruited a new chair for its Education Department, who was also director of this grant, to expand the College's teacher inservice program which focuses on technological applications in the classroom.

The Center is tied to, and an integral part of, the College's master's degree program. The College is committed to seeing this program become an established part of its curriculum. Although the inservice program has barely met its operating cost, it will continue to be tuition-driven. The College has been very successful at marketing other programs in its outreach activities and expects that this program will be equally successful.

E. Center Operation

The center is open ninety hours a week and provide ample opportunity for visitors to make use of the facility. Special arrangements and incentives will be developed to ensure that the depository of special adaptive hardware for the handicapped and the special education software receive maximum use.

Trexler Library was featured in Library Journal, December 1988. This exposure prompts librarians and library directors to inquire about the new library. Representatives of at least thirty colleges and universities have visited the center. They are supplied with detailed information on all aspects of the administrative and instructional components of the center. The integration of the Educational Technology Center into day-to-day operations of the library is included in all descriptions and tours of the library. Although this was not a planned objective of the original proposal, the Center has become a significant component of the library's plan for better utilization of information resources. Eventually, the Educational Technology Center and the library, in its role as an information center, may become fused to the point that they no longer have a clear boundaries or separate identities.

The Director of the Center intends to prepare a monograph on technology resource centers based on the Microcomputer Resource Center at Saint Martin's College, which he founded, and the Educational Technology Center at Allentown College. The monograph will include information on developing software collections, staffing, controlling access, hardware and software maintenance, processes and procedures, integration with instructional programs, servicing special clients, etc.

The Center staff encourages care givers and occupational and physical therapists working with the physically handicapped to bring their students to the center for preliminary analysis of computer usage. Although only a few handicapped students are presently using the Center, this aspect of the project will gradually grow. Two grants were prepared during the 1988-89 school year for funds for more facilities and training opportunities for the physically handicapped, but so far the appropriate funding agencies have not been found.

Special workshops in adaptive devices are planned, and all workshop developers will be encouraged to address the issues associated with the physically handicapped and other underrepresented groups during their workshops. Included in the guidelines for developing workshops will be articles and references to information about equity of access.

Although the primary focus of this grant is to provide a resource for teachers of mathematics, science, and computer learning, the open-door policy of the Center makes it available to others who might profit from becoming aware of the potential of computers. The availability of adaptive devices has been drawn to the attention of the Chair of the College's Nursing Department who is considering the training of nurses to deal with the elderly in the use of computers as communication devices. Many elderly people suffer from the same physical limits as the handicapped students in our schools and colleges, and the computer offers them many of the same opportunities for independence.

V. NATIONAL SIGNIFICANCE

The funding of this project was based on its potential to impact the teaching of science mathematics and computer learning at the national level. Clearly the national need for preparing a technologically literate society is understood by all who examine our schools and their goals. Most agree that the best approach to technological literacy is to have technology integrated into the curriculum, and more important into the mathematics and science curricula. To this end, the Center provides informal opportunities for instruction and preview, formal instruction though workshops, and advanced instruction through graduate course work and academic degrees.

During its first year, the project has provided instruction to over one-hundred teachers and indirectly has affected over a thousand students. The potential impact is much greater because as many as a thousand teachers a year could use the facility, and some of these teachers will be working with other teachers in their own schools. It is not unrealistic to project that the Center will influence the instruction of over one hundred thousand students a year. This impact would not have been possible without the funding supplied by this grant.

One of the graduate programs -- Computers in Education -- could not be offered without the grant. This degree program is perhaps the most significant, because only fifty-seven colleges and universities in the United States offer graduate degrees in the critical area of computer education. The program in unique in the area served by the College, and it meets a special need that many educators have identified as critical: the need to integrate the use of educational technology across the curriculum.

Although the Center serves primarily as a resource for training of practicing teachers, the availability of the Center makes it possible for the College to redesign its pre-

service teacher education program to include effective uses of technology, including its uses in teaching for subject-matter mastery.

Underlying this entire project is the firm belief there is a critical need to supply secondary schoolteachers with more vigorous academic training, and that these teachers can impact the schools in which they teach more readily than outside consultants or experts. The program provides a viable link between the academic, research-based resources of colleges and universities and the practitioner.

A second underlying fact is there is a need to provide teachers with instruction in applications of the newest classroom technology in an environment free from commercial bias. The ambience that can be created in a small college setting can play a significant role in the acceptance of the intervention. Small colleges understand the need to be service-oriented, and teachers appreciate not having to contend with the bureaucracies so often involved in dealing with major research institutions.

The short-term benefit of this project has been the timely development of a comprehensive educational technology center. The potential of this project for other institutions is very clear.

Another benefit that can accrue from this program is that it can cause other colleges to re-examine their own master's degree offerings for teachers. There is clearly a tendency for master's degree programs to have a pedagogical focused, with little or no consideration being given to a teacher's content or subject-matter base. The politics of most campuses is such that collaborative programs between academic departments and the programs are nonexistent. The Allentown College program serves as a model for replication.

The creative portion of the project lies in the interdependency of the major components -- master's degree program, inservice program, and preview center --which lead to a very cost-effective approach for supplying technological support for schools. Another strong feature of the program is the role of the schoolteachers. The utilization of schoolteachers to provide the inservice is not new. What is new is that the teachers will receive specific training in providing inservice, and that they will develop inservice projects under the direct supervision of college faculty who are experienced in this area.

The second significant aspect of this program that makes it different from most other graduate programs for teachers is the content component of the program. Teachers are provided the opportunity to complete their academic preparation as science or

mathematics teachers while pursuing their post-baccalaureate programs. It is a national problem that the academic preparation of many high schoolteachers does not extend beyond lower division courses in their major academic fields of teaching.

The third component that makes this program different is the fact that the core curriculum includes a course in educational technology for all participants. Each «participants becomes» a user of the latest technology - interactive video, information retrieval, desktop publishing, etc. ; and each participant becomes expert in the software of his/her own subject matter area.

All courses in the graduate program are researched-oriented. For example, the course in BASIC programming offered as part of the Computers in Education program includes the study of the research on problems that novice programmers have in learning a language and an introduction to the research underlying software engineering in addition to the typical presentations of the syntax of a programming language.

The College has already shown its commitment to implementing this program. It has chosen to allocate a significant portion of its resources to a master's degree program with a focus on mathematics, science, and computer learning. The grant has provided the necessary resources to make the program possible, and will provide needed services to the region's high schools.

The Educational Technology Center and graduate programs are consistent with mission of the College, and builds on the College's nationally recognized success in offering science, mathematics, and computer training to public and private schoolteachers in a wide geographic area.

APPENDIX A

A CENTER FOR ACADEMIC EXCELLENCE
IN
MATHEMATICS, SCIENCE, AND COMPUTER LEARNING

A PROPOSAL

A CENTER FOR ACADEMIC EXCELLENCE
IN
MATHEMATICS, SCIENCE, AND COMPUTER LEARNING

A PROPOSAL

Submitted by

Dr. Patrick J. McIntyre
&
Dr. Karen Doyle Walton

Allentown College of Saint Francis De Sales
Center Valley, Pennsylvania 18034

June 1988

OVERVIEW

Allentown College of Saint Francis de Sales is proposing to establish a technology center for excellence in the teaching of mathematics, science, and computer learning. The center will be the focal point of a comprehensive program involving graduate degrees, applications of technology, training of trainers, and curriculum development. The grant being requested will provide costs for (1) a hardware collection, (2) a software collection, (3) a depository of adaptive hardware for the handicapped, and (4) a curriculum library.

The goals for the center are to provide inservice workshops to 500 or more teachers per year on campus, and an equivalent amount of instruction off campus; to provide graduate instruction to 100 teachers per year; and to have more than a thousand teachers use the preview services of the center each year.

The federal funds would be used for start-up costs; the center itself would become self-supporting through fees and tuition. Supplemental funding will be sought from venders, foundations, and individuals, as needed, to meet expansion and appropriate ancillary projects.

Teachers from the metropolitan Philadelphia area, southeastern Pennsylvania, and northern New Jersey would be served by the center. The College is conveniently located adjacent to Interstate 78 and the Northeast Extension of the Pennsylvania Turnpike. The area surrounding the College is developing into a bedroom community for Philadelphia and northern New Jersey.

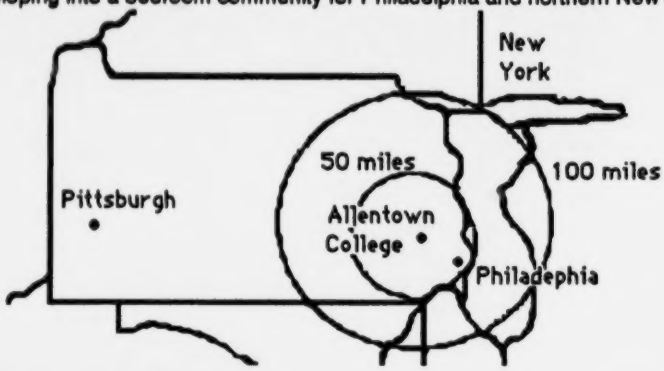

Figure 1: Location of Allentown College of Saint Francis de Sale

The center will be modeled after the highly successful microcomputer resource center of Saint Martin's College, Lacey, Washington (See Appendix A). It will be directed by the founder and former director of that center, Dr. Pat McIntyre.

ALLENTOWN COLLEGE

Allentown College is a coeducational, Catholic liberal arts college located on a lovely, rolling 325-acre campus in Center Valley, Pennsylvania. It was founded in 1965 by the Oblates of Saint Francis de Sales, a religious order with more than a century of commitment to education.

The student body numbers approximately 950 day students and 800 evening students. The College has grown to its planned enrollment size, and is now focusing on the strengthening of its liberal arts program with selected professional programs in keeping with its mission. The graduate program in Education, which would be supported by this grant, is the most recent area selected for development. The graduate program will be primarily a summer school program; the workshop program will be conducted weekends and evenings year round; and the proposed preview center will, also, be utilized evenings and weekends throughout the year.

In recent years, the college has offered a number of very successful courses and workshops for teachers in the areas of mathematics, science, and computer learning. Based on the response to these activities, the college recruited an experienced director for its Education Department to help them establish a strong graduate program with an emphasis on mathematics, science, and computer learning. Building on the experience of the Allentown College staff, the reputation of its previous programs, plus a director with a successful record in program development, the College looks forward to offering an outstanding graduate program.

All of the Allentown College staff involved with the previous program have had successful high school teaching experience. Through the graduate program and professional organizations, additional high school teachers will be identified and trained to offer workshops both on campus and at school sites. In time, the cadre of teachers trained at Allentown College will be the main instructional resource for the inservice component.

Unlike many small and medium sized liberal arts colleges, Allentown College has a sound financial base with an endowment of approximately five million dollars, all major buildings have been constructed with minimum outstanding debt, and a sound fiscal management program is in place that insures continued growth and well being into the 21st century. The recent completion of the new college library has made space available that is being renovated for the proposed center at the College's expense. The College has ample dormitory space available to accommodate participants in the summer school classes and school-year workshops.

THE TECHNOLOGY CENTER FOR EXCELLENCE

The major portion of the funding of this grant will provide the resources to establish a model technology center. The principle components are shown in Figure 2.

A. Hardware Collection

Central to this proposal is the development of a technology center which will provide teachers of the region with access to high technology hardware -- computers, disk drives, printers, interactive video, adaptive hardware for the handicapped, robots, etc. -- that is available for use in the K-12 setting. Workstations will be available at the center to demonstrate to visitors the latest innovations and will provide the equipment necessary to conduct courses and workshops.

The laboratory will contain clusters of Apple GS's, MacIntoshes, and IBM's in sufficient number to offer hands-on workshops. More significant than the computers themselves will be the accessibility of peripheral devices -- speech synthesizers, card readers, scanners, adaptive hardware for the handicapped, etc. -- which extend and expand the utility of the computer for special purposes and special people. The center will be opened to all adults, and children accompanied by an adults. The center will be designed for teachers, and access will also be provided to the physically handicapped and elderly who are interested in determining the utility of a computer or a peripheral for their particular needs.

Tuition and fees associated with courses and workshops will take into account the life expectancy of hardware and software so that replacement and upgrading can be done in a timely manner without dependency on external funding.

B. Software Collection

The center will have a software collection which will make available opportunities for preview and evaluation. The center will be open approximately sixty hours per week, and it will operate as a reserve room operates in a library. All software will be restricted to the center, and copying will be limited to a public domain collection.

The center will focus on software in the areas of mathematics, science, and computer learning, and the collection will be catalogued according to topics specific to the content areas.

One of the conclusions reached by Dr. McIntyre at Saint Martin's College, which he developed into one of the largest software collections in the country, is that generic classification schemes for software collections are not particularly useful to a teacher with specific needs. For example, a teacher searching a database for a program that will help students with problems involving the slope and intercept of a line is hindered by a classification scheme that only identifies such a program as being under "algebra."

A workshop will be developed for each of the academic areas of special interest to the center -- Chemistry, Biology, Physics, Mathematics, etc. -- and the software collection will be the source of demonstration and preview software. A prototype workshop in Chemistry was developed at Saint Martin's College (See Figure 3) to provide an introduction to the over two hundred Chemistry programs that were available in the Saint Martin's collection. The workshop attracted junior high, high school, community college, and college instructors, and its success was tied to the availability of almost all the published Chemistry software. Descriptions of other workshops can be found in Appendix B.

Chemistry Software (1 Credit)
A review of the large number of Chemistry programs available to the high school, college, and junior college teacher. Utilizing Saint Martin's College's collection of over 100 disks of Chemistry programs, including the Project Seraphim collection, participants will gain first hand experience with a wide range of software.
Aug. 8, 9; Friday, Saturday 10:00 am - 6:00 pm
Room 351 P. McIntyre, SMC, Faculty

Figure 3: Sample Listing of a Content-Specific Workshop

The collection will also include software specifically developed for the physically handicapped.

C. Adaptive Hardware for the Handicapped Collection

Part of the preview center will be a collection or depository of adaptive hardware for providing access to technology for the physically handicapped. A similar collection at Saint Martin's College provided a very valuable resource for physically handicapped students throughout the Pacific Northwest. The presence of the equipment was also very helpful in making people who had limited contact with the physically handicapped more aware of their problems and the potential that technology affords. All workshop developers at Allentown College will be encouraged to devote some portion of their workshop to the use of adaptive hardware.

A local physical therapist and special education teacher will develop a series of workshops on computers and the physically handicapped. Assistance will be available from Judy McDonald who taught the outstanding workshops on computers and the physically handicapped at Saint Martin's College. (See Appendix B) In four years, over three hundred teachers, occupational and physical therapists participated in her workshops. Students came from as far away as Texas to take advantage of the training. The workshops would not have been possible without access to the hardware available at the center.

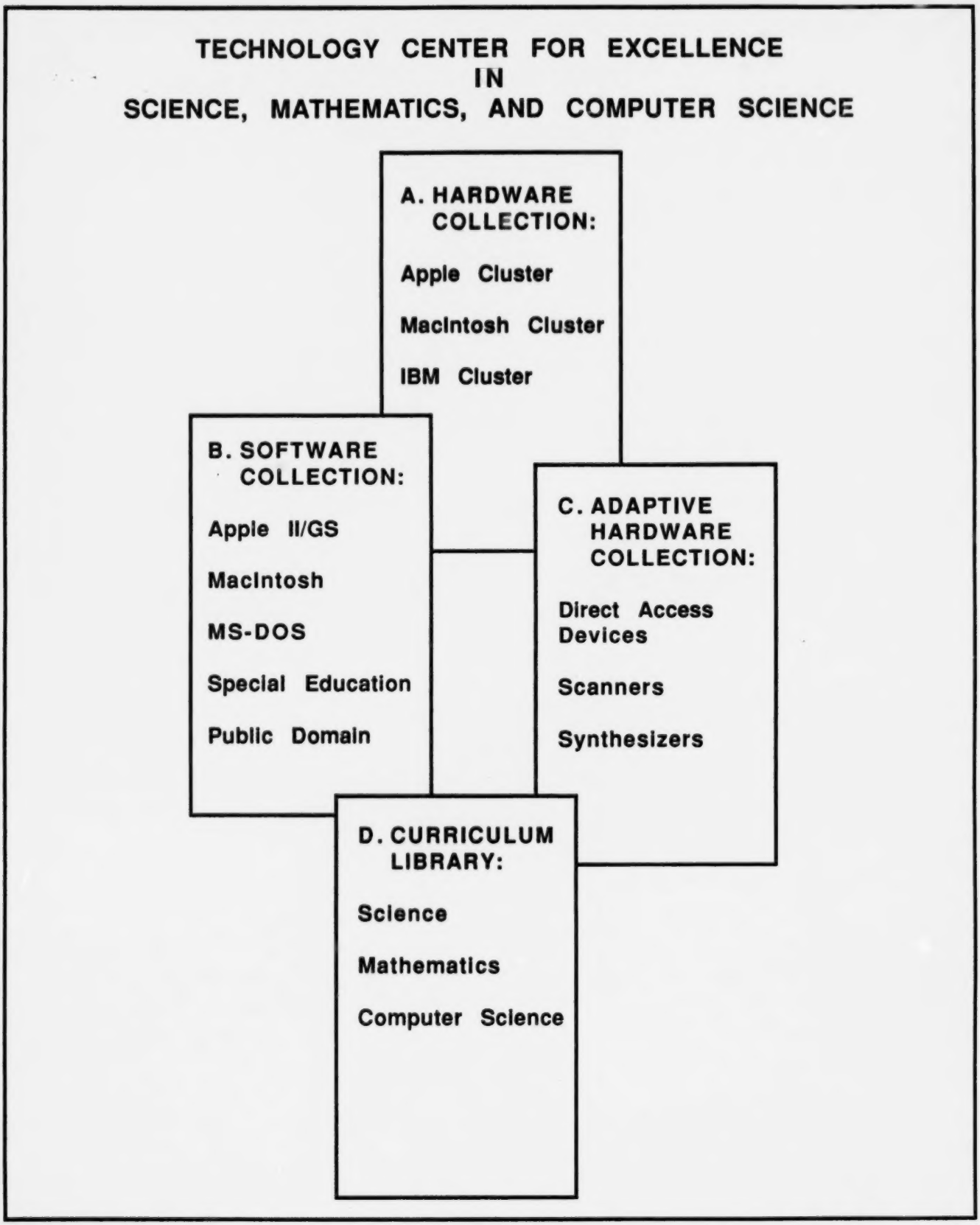

Figure 2: Master Plan

D. Curriculum Library

In conjunction with the technology center and the graduate program, the College library will develop a curriculum library.

PROGRAM GOALS

The proposed center will integrate various components of the program in such a way that the College will be able to efficiently meet the needs of a large number of teachers. To begin with, the center will provide inservice opportunities to teachers throughout the region. Use of the center by the regular student body of Allentown College (especially those in Mathematics, Chemistry, and Biology secondary teacher certification programs) will be encouraged, but their use will not be allowed to interfere with the inservice priorities.

The efficiency of the center will be due in part to the graduate program in education. It will provide a pool of experienced teachers to staff much of the inservice program and develop demonstrations and informal learning experiences. Although the College staff will offer some workshops, their primary role will be to assist in the development of workshops, to provide training in subject matter, and to ensure that their students are knowledgeable in the latest technologies.

The model developed at Saint Martin's College never required more than one full time equivalent administrator for both the center and the inservice program. Yet it delivered four times the service provided by centers in the state of Washington which operated out of regional educational agencies. Between 1982 and 1986, the center provided 3698) teachers with two-days workshops. The program was tuition driven; the state centers were state supported.

The integration of inservice workshops, graduate education, preview center, and specialized application can be much more powerful than the total impact of four isolated programs working towards the same goals. The goals for the first year of the proposed project are summarized in Figure 4, and Figure 5 shows the goals for the first five years. The following narrative describes the major characteristics of each of the components.

A. Master's Degree Program

The technology center will be the major resource for the master's degree program being developed at Allentown College. It is anticipated that this program will be unique in several ways.

a. Content

Although the graduate degree will be in education, the program will have as one of its four components a content-knowledge base corresponding to a discipline in the K-12 environment. Wherever possible, the content courses will make use of the technology that is available at the center.

b. Education

The education component of the program will focus on the research base for instruction and the use of technology for the acquisition of information. Students will be taught analytical skills for the diagnosis of research. In a curriculum course, students will be made aware of the various approaches to curriculum development.

c. Technology

Technology will be an overriding theme of the program. All participants will take a course in technological applications in education which will include word processing, database management, spreadsheets, database searching, presentation software, desktop publishing, interactive video, etc. These same skills will be utilized as needed throughout the curriculum.

d. Training

A second component of the graduate program will be the inclusion of a required course in "training" in which participants will be introduced to the research on adult learners and taught skills for working with adults and designing instructional programs for teachers. It is anticipated that many of the master's degree projects will be to develop instructional programs for other teachers, including science and mathematic instruction for elementary school teachers. Alternatives to workshops, interactive video, CAI, etc., will also be considered for providing inservice.

B. Inservice Workshop Program

The objective of the center is to develop a series of workshops in each of the three subject matter areas -- mathematics, science, and computer learning. Initially, workshop will be developed and offered by the present College faculty, but as the master's degree program is developed, a cadre of teachers will emerge to serve as the instructors. This process was developed at Saint Martin's College where eleven teachers developed inservice programs as their master's degree projects in the area of computers in education. They now form the instructional staff for the ongoing workshop program.

The inservice workshops developed through the center will not be limited to computer education, nor will they be restricted to on-campus offerings. Graduate students will be encouraged to develop workshops that can be taught in their own school districts, providing both content and methodology useful in addressing the needs of their students. The most significant impact of the total program will be in its ability to provide trainers to local school districts to serve as curriculum specialists and consultants in the areas of mathematics, science, and computer learning.

FIRST YEAR GOALS
for
TECHNOLOGY CENTER FOR EXCELLENCE

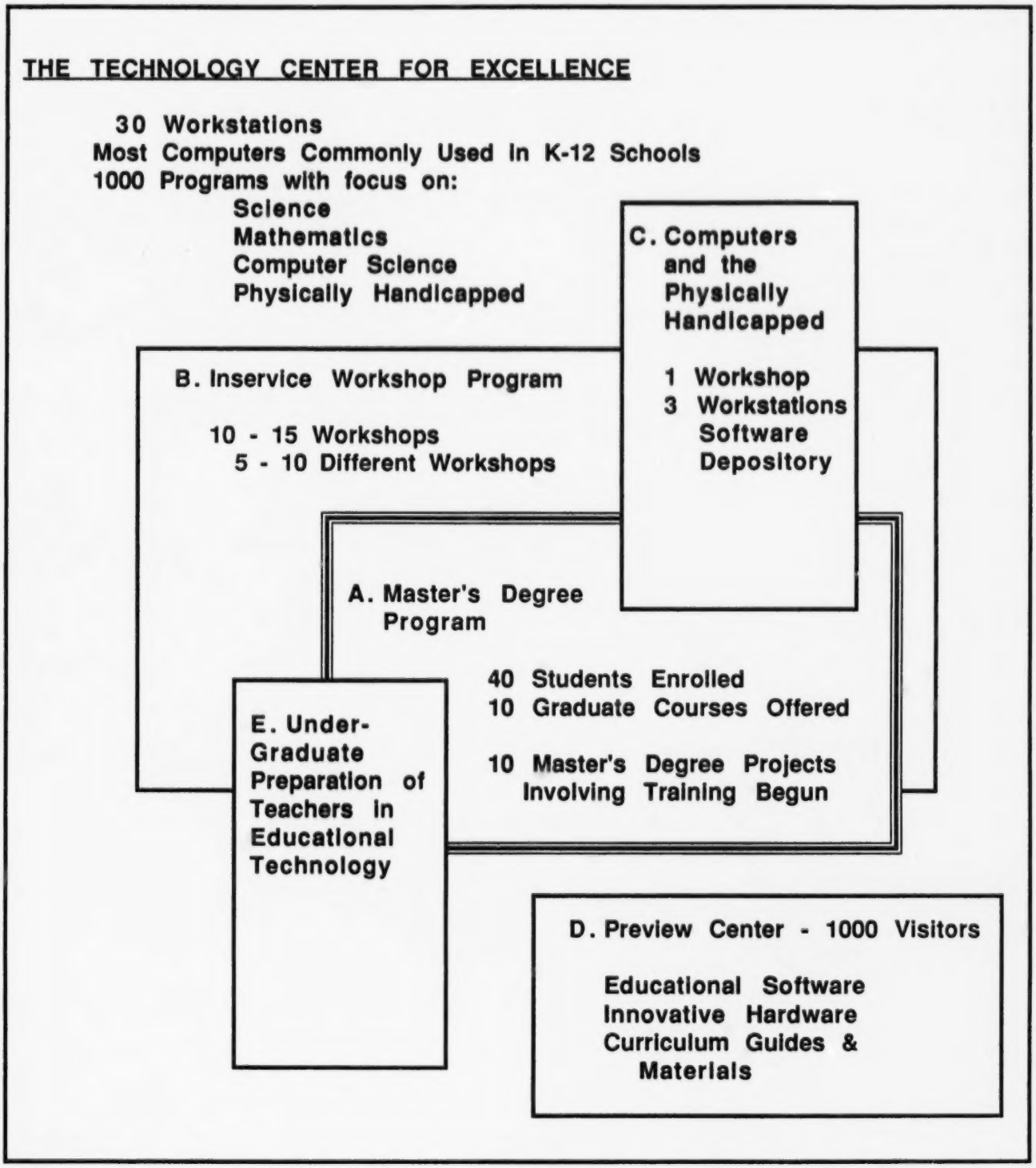

Figure 4

FIVE YEAR GOALS
for
TECHNOLOGY CENTER FOR EXCELLENCE

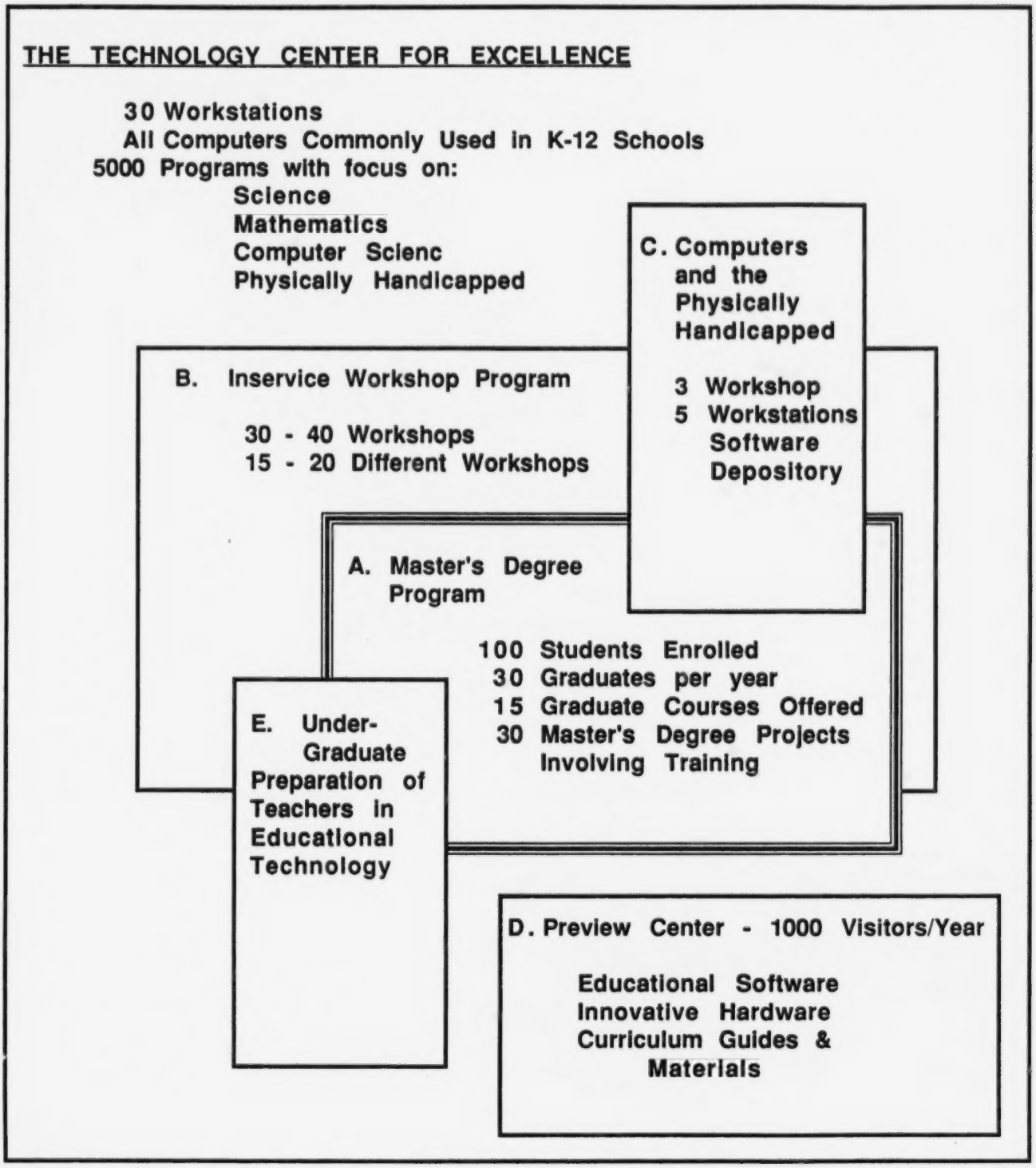

Figure 5

C. Computers and the Physically Handicapped

One feature of the Saint Martin's center which was of particular note was the depository of adaptive devices for students with physical handicaps. The proposed center would include similar equipment in order to bring attention to this application of technology to all those who use the center.

D. Preview Center

The center should serve as a preview location for current software. Teachers who are responsible for selecting software are still limited in access to current materials. The center will collect software available in mathematics, science, and computer learning. Some additional software will be included, should it be made available from venders. Any teacher coming to the center will be able to see the best software that is of interest in his or her subject area.

A major project for the center staff will be to prepare a cataloging system that will facilitate the location of software on specific topics within a discipline. Ultimately, a good cataloging system should include not only a means of locating the software, but have a database of evaluations to assist teachers in selecting the actual software they would like to preview.

E. Undergraduate Preparation of Teachers in Educational Technology

The availability of hardware and software in the center at Allentown College will provide a distinct quality to the undergraduate teacher certification program of the College's Education Department. Practical experience in educational technology will be included in each course in the preservice program.

PROJECT DESIGN

A. Administration

The administration of the technology center and the related master's degree program will be under Dr. Pat McIntyre, the Chair of the Education Department, who reports to Dr. Karen Doyle Walton, the Academic Dean. Those individuals co-authored this proposal and will play active roles in providing instruction and services.

a. Director - The position of Director of the grant and the technology center will be held by one of the principle investigators, Dr. McIntyre. The Director will have a reduced teaching load, and will contribute half of his time to project activities. His salary will be paid by the College. After the initial start-up period, the position of Director will be reduced to quarter time.

b. Inservice Coordinator - The Inservice Coordinator will report to the Director of the technology center. This position will be funded from the grant at quarter-time during the initial phase of the project.

The Inservice Coordinator will be responsible for (1) scheduling workshops, (2) providing promotional materials, (3) developing registration processes, (4) providing instructional support, and (5) overseeing teacher evaluations. The Inservice Coordinator will work closely with the Project Director and the Academic Dean in the selection of workshop developers and presenters.

c. Center Manager - The Manager of the center will report to the Director. This will be a quarter-time position in the initial phase of the project, and the position may be increased to full-time as center usage warrants. The position might be coupled with that of Inservice Coordinator, depending on the skills and interests of available candidates.

The Center Manager will be responsible for the daily operation of the center, including but not limited to: (1) developing schedule, (2) organizing and scheduling student help, (3) providing for care and maintenance of equipment, and (4) developing the cataloging system and inventory controls.

d. Advisory Board - The center will have an Advisory Board made up of representatives of each of the groups to be serviced by the center -- departmental and administrative representatives of the College, local teacher groups, local professional groups, the Pennsylvania Department of Education, and advocates for underrepresented groups. The Board will meet quarterly to review the progress of the center and to present recommendations effecting their constituencies. The Board will be called upon to review the policies of the center and will provide input and support for projects undertaken by the center.

The Advisory Board will recommend procedures for the evaluation of center activities. Although control of the center must ultimately rest with Allentown College's administration, the broader base of knowledge provided by the Advisory Board will best serve the many groups that will benefit from the center.

B. Timeline

The timelines set for this proposal are based on the assumption that grants will be awarded in August 1988 and that funds would be available by January 1989. The funding period of the grant is assumed to be twelve months, with the program itself continuing indefinitely. A detailed diagram showing activities and time periods is provided in Figure 6.

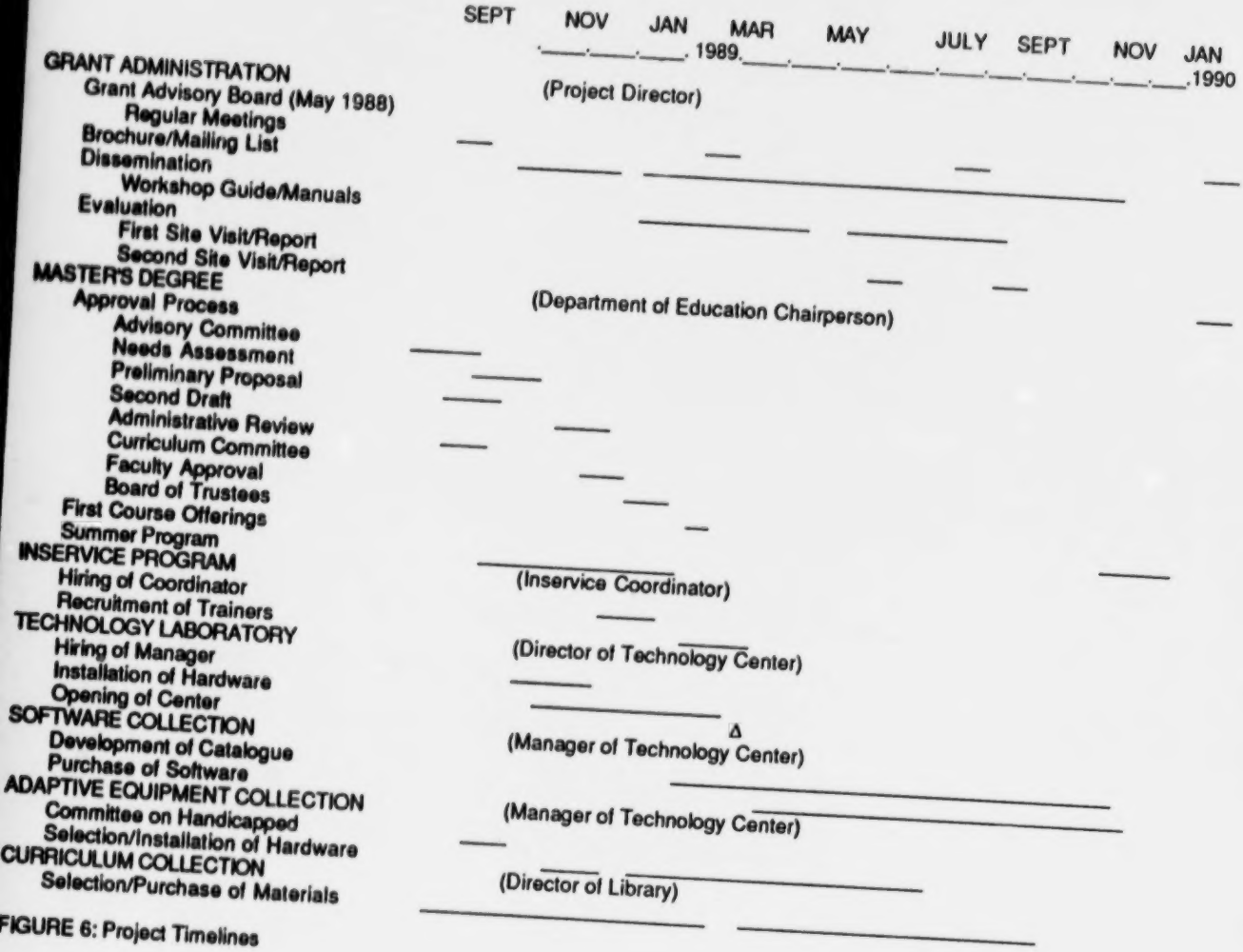

FIGURE 6: Project Timelines

C. Evaluation

The primary function of the center will be to provide service to teachers and school districts that are interested in improving their instructional programs in mathematics, science, and computer learning, with a focus on the application of technology. With that in mind, the evaluation of the center will be done by surveying the users of the facility.

Any teacher who uses the center will be expected to complete a short, on-site evaluation and to register his/her name and address. On a biannual basis, a mailing will be made to all center users to determine how the use of the center has impacted their classroom or other professional activities, and to obtain from them suggestions for improvement in the services. It will be the responsibility of the Director to conduct the survey and report the results to the Advisory Board. The first survey will be conducted after the center has been in operation for six months.

In order to obtain an independent assessment of the center, an Evaluation Team of three knowledgeable educators will be asked to visit the center three months into the funding period, and again after twelve months. The Evaluation Team will prepare a written report concerning the progress of the project in meeting its objectives, making recommendations for future developments. The Evaluation Team will be established through the Pennsylvania Department of Education, and funds are requested for honoraria for the team members and the expenses incurred.

D. Institutionalization

Allentown College is already committed to most, if not all, of the activities proposed in the grant request. Building on its experience with previous grants for workshops and curriculum development projects, the College has recruited a new chair for its Education Department, who will also be Director of this grant, to expand the College's teacher inservice program which focuses on technological applications in the classroom. This project will be tied to the development of the master's degree.

This grant would insure that the program is implemented in a timely manner and that it will serve as a model for other institutions. Through a similar grant, the Director, Dr. McIntyre, was able to develop a model program in the state of Washington which was replicated by the Office of the Superintendent of Public Instruction at nine other centers across the state. The state program is presently budgeted at over two million dollars annually, and it provides services to every school district in the state.

The Washington State model has a flaw in that it is tied to biannual state budgets, and it is not tied to institutions with a vested interest in its continuation. A tight money period could result in a statewide system of resource centers being cut back or abandoned, as was the case in California's budgetary emergency of 1987. This could not happen to the proposed project, because the program will be tuition and fee driven.

The center is tied to, and an integral part of, the College's master's degree program. The College is committed to seeing this program become an established part of its curriculum. The workshop program will be tuition driven, and the College has been very successful at marketing other programs in its outreach activities.

PRODUCTS

Although the proposal is for a grant and not a contract, it is anticipated that products will be developed in conjunction with the delivery of services to teachers. Each educator who develops a workshop for the center will author a workshop teacher's guide. Each guide will include a course outline, schedule of events, audiovisual materials, handouts, sample programs, and other materials to assist another instructor in conducting the workshop. These guides will be placed in the public domain and disseminated to interested educators either directly or through the ERIC system.

As part of the management of the center, a cataloging system will be developed that will allow software to be located according to topics (for example, nomenclature) rather than general subject areas (Chemistry). The beginnings of such a system is available from Saint Martin's College.

As part of the promotional activities of the center, a newsletter will be published for distribution to local schools and visitors to the center. The newsletter will focus on center activities, as well as related activities from other sources, e.g, the National Center for Research in Mathematical Science Education at the University of Wisconsin (NCRMSE), the Technical Education Research Centers (TERC), Trace Research and Development Center for the Severely Communicatively Handicapped.

A goal of the grant will be to publish a guide for the development of other "centers of excellence." Other centers might have the same specific focuses -- mathematics, science and computer learning -- or the centers might be established to meet needs in other areas of the curriculum, e.g., foreign languages, reading, social studies. The documentation associated with the development of the proposed center will be available to interested parties, and will be offered to the ERIC system for possible inclusion, as will other materials generated at the center or through related activities.

a. Plan of Operation (10 points)

1. Quality of Design

The proposed program is based on the nationally acclaimed workshops and curriculum projects conducted at Allentown College and a highly successful program conducted at Saint Martin's College in the state of Washington. The proposal requests only a portion of the start-up cost, leading to a program that will be tuition and fee driven. Research has shown that the trainer-of-trainers approach is very successful in accomplishing curriculum changes. In the proposed application of the model, the teachers will not only prepare the

material for their specific workshops, but will be trained in the process of providing instruction to adult learners in a workshop environment.

A significant difference in this model will be that the instructors will receive in depth preparation both in content and process. In many of the trainer-of-trainer programs, those trained to be trainers receive only a short-term training period before they teach a workshop. Trainers prepared in this way are sometimes only able to teach the scripted material, and they lack the depth to prepare new materials for additional workshops. The workshops will be prepared as part of the graduate degree program of the participants, and their work will receive the academic scrutiny associated with an advanced degree. All workshops will be field tested and evaluated. The workshops developed through the program will be placed in the public domain and made available to other professionals.

2. Management Plan

The general organization of the program is illustrated in Figure 4 which shows the goals for the first year of the project, and Figure 5 which shows the goals for the first five years. Using the technology center as an organizational scheme, a series of related and mutually supportive activities will be undertaken. This symbiotic relationship has proven to be highly successful at the Saint Martin's College center.

The timeline provided in Figure 6 shows some of the detailed planning that has already taken place, and should serve as an excellent document for planning by the Advisory Board and the project management.

3. Objectives

The specific objectives for this project are:

- To establish a resource center committed to developing excellence in mathematics, science, and computer learning.
- To develop a series of workshops, for teachers to improve their understanding of mathematics, science, and computer learning with a strong focus on the application of technology.
- To identify and train secondary school teachers to be trainers of teachers and to teach the workshops.
- To develop for replication a model of a comprehensive technology resource center which focuses on dissemination of research based training.

4. Access

The center will be open sixty hours a week so as to provide ample opportunity for visitors to make use of the facility. All adults, will be provided access. Special arrangements and incentives will be developed to insure that the depository of special adaptive hardware for the handicapped and the special education software will receive maximum use. Regional colleges and universities will be invited to visit the center, and they will be provided with detailed information on all aspects of the administrative and instructional components of the center. The Director will prepare a monograph on technology resource centers based on the microcomputer resource center at Saint Martin's College and the technology center at Allentown College.

Every effort will be made to include within the cadre of teachers in the graduate program those teachers who serve the traditionally underrepresented. The proximity of the center to the major east coast metropolitan areas of Philadelphia, New York, Baltimore, and Washington should insure participation of such participants.

The approach to the problems of access for the physically handicapped will be to encourage care givers and occupational and physical therapists working with the physically handicapped to bring their students to the center for preliminary analysis of computer usage. Special workshops in adaptive devices are planned, and <u>all</u> workshop developers will be encouraged to address the issues associated with the physically handicapped and other underrepresented groups during their workshops. Included in the guidelines for developing workshops will be articles and references to information concerning equity of access.

The selection process for staffing of the center and the workshop program will include special attention to the need of role models for underrepresented groups. Participants in the graduate program will be given the opportunity to include in their training knowledge of critical foreign languages, a program already in place at the college, and not directly supported by this grant.

Although the primary focus of this grant will be to provide a resource for teachers of mathematics, science, and computer learning, the open-door policy of the center will be such that others who might profit from becoming aware of the potential of computers will be encouraged to use the center. The availability of adaptive devices has been drawn to the attention of the Chair of the College's Nursing Department who is considering the training of nurses to deal with the elderly in the use of computers as communication devices. Many elderly suffer from the same physical limitations as the handicapped students in our schools and colleges; the computer offers them many of the same opportunities for independence. [A separate grant is being considered from a private foundation to explore the utilization of microcomputer technology with the elderly.]

5. Participation

In addition to those members of the teaching staff who will also serve, the following will be on the Advisory Board:

Dr. Joan Grindley: Dr. Grindley is Chair of the Nursing Department of Allentown College. Her specialties and areas of publication include health needs of handicapped children and integration of handicapped children into the public school system.

Mr. Kenneth Westgate: Mr. Westgate is Coordinator of the Computer and Robotics Laboratory at Good Shepherd Home in Allentown. During his sixteen years at Good Shepherd Home, he has worked on the Severely Physically Handicapped Employment System Project and the Camp Fight Project (a summer program for severely multiply physically disabled students which introduces them to applications of technology).

Dr. Kenneth Fifer: Dr. Fifer is Chair of the Allentown College English Department. He is a nationally published poet and has served as artist in residence in over 100 elementary and secondary school classrooms under the Arts in Education Program of the Pennsylvania Council on the Arts. He is consultant to the Arts in Special Education Project of Pennsylvania and the New Jersey Leadership/Resource Development Model: Arts for the Handicapped.

Dr. Frank Reardon: Mr. Reardon is the Educational Research Associate for the Pennsylvania Department of Education. Mr. Reardon is the Mathematics Advisor for the Pennsylvania Department of Education.

Mr. Michael Schlehr: Mr. Schlehr, a thirty eight year old English major at Allentown College, is a traumatic spinal cord quadraplegic. He writes a regular column for the Allentown College Minstrel entitled "Stunt Driver's Corner." He is a member of Operation Overcome, an advocacy group for the disabled.

b. Quality of Key Personnel (5 points)

1. Key Personnel - (NOTE: Vita included have been abbreviated to keep within the length requirements of the proposal.)

i. Director - The director of the project will be Dr. Pat McIntyre (Appendix D). Dr. McIntyre was recently hired by Allentown College to provide leadership in the development of a master's degree program which will focus on the application of technology to the teaching of mathematics, science, and computer learning. His thirty years of educational experience includes teaching at all levels kindergarten through graduate school. He has been the prime developer of master's degree programs at Western Washington University (Science Education) and St. Martin's College (Computer Education), and has been involved in a wide range of innovative programs. He is a successful advocate for computer access for the physically handicapped. Dr. McIntyre will development the Center and the master's degree program. As the program develops, it is anticipated that he will relinquish control over one or the other of these positions to insure adequate administrative support.

Examples of brochures (Appendix B & C) and a fact sheet (Appendix A) from the Microcomputer Resource Center he established at Saint Martin's College (and is proposing to replicate at Allentown College) are attached. They include descriptions of twenty five of the over forty workshops developed at the Center; special note should be given to the series of workshops for the physically handicapped and other special need students.

ii. Others

Dr. Karen Doyle Walton (vita Appendix E): Dr. Walton will assume responsibility for the development of the mathematics strand of the master's degree program and will be a member of the Advisory Board. Dr. Walton directed and taught in the mathematics, science, and computer learning projects listed below under "ii. Special Qualifications." In the past five years, she has disseminated the curriculum developed for those workshops (especially focusing on computer applications to the teaching of mathematics and computer instrumentation in high school science laboratories).

Her twenty years of teaching spans junior high through college classes. She is an advocate of equity for women and minorities in the fields of mathematics, science, and computer science. Her most recent project, "Mathematics, Computer, and Science Project for Elementary and Secondary Educators" focused on the underserved and underrepresented in mathematics and science, e.g., women and ethic minorities. Dr. Walton will be available for teaching in the graduate and workshop programs. Her position as Academic Dean and Director of Planning will insure the smooth integration of the center into the college's academic program.

Mr. John Meinke: Mr. Meinke is Chair of the Allentown College Mathematics and Computer Science Department. He will assume primary responsibility for the development of the computer science aspects of the project and will serve as a member of the Advisory Board. Professor Meinke is an experienced high school and college teacher. Before coming to Allentown College, he served as Assistant Project Director to three NSF Pre-College Teacher Development in Science Education Programs and a NSF Comprehensive Assistance to Undergraduate Science Education Program, which entailed the establishment of a major computer laboratory. He is a consultant for the CEEB Advanced Placement Computer Science Program and has been a member of several national committees on computer curricula.

Dr. Roger Berg: Dr. Berg is an Associate Professor of Chemistry at Allentown College. He has taught in the computer interfacing projects listed under "ii. Special Qualification." He was co-founder of TEACHEM, an organization of local high school and college chemistry teachers, and co-leader of the Lehigh Valley Section of the Partnership Institute, a program for instructing high school teachers in new fields of chemistry. Dr. Berg received the 1983 Allentown College Outstanding Teacher Award.

Mr. Thomas Bross: Mr. Bross is Chair of the Science Department of Moravian Academy. He will teach workshops and serve on the Advisory Board. Mr. Bross has taught physics, mathematics, and computer science courses on the high school and college levels for thirteen years. He was an instructor or director for each of the workshops listed under "ii. Special Qualifications." Mr. Bross won the 1984 Presidential Award for Excellence in Science Teaching, designating the most outstanding science or mathematics teacher in the state of Pennsylvania.

Computer Center Manager - A person has not been identified for this position, but included in the job description will be the importance of people skills and success as a K-12 teacher.

Computer Inservice Coordinator - A person has not been identified for this position, but the job description will include the need for someone with excellent organizational skills.

iii. Time Commitment

Director: The director will have a half-time commitment to the center, but he will also have a quarter time commitment to the graduate program which will be developed in concert with the center.

Computer Center Manager: The manager position will be quarter time during the start-up period, but this position will need to be expanded as additional services are provided by the center. This position might be held by the same person who coordinates the inservice program.

Computer Inservice Coordinator: The coordinator position will be quarter time during the start-up period.

Strand Coordinators: Each of the stands -- Mathematics, Chemistry, Biology, Computer Science, etc. -- will be funded for a half time coordinator for two months during the first summer.

Workshop Developers: The initial series of workshops will be developed by college staff and members of the Advisory Board who will receive honoraria.

iv. Underrepresented Groups

The Advisory Board (described elsewhere in the proposal) is well represented by members of underrepresented groups. Initially two women and one physically impaired person will serve. It will be the responsibility of the Advisory Board to nominate additional members.

The guidelines for preparation of workshops will include provisions and resources addressing the needs of underrepresented groups. In a project not funded by this grant, the College is developing a computer application course for its master's degree program in nursing. Assuming the depository of adaptive hardware becomes available, this resource will be made available to that program provided that use does not interfere with the proposed project.

2. Qualifications

i. Experience and Training

All the key personnel for the project have academic preparation directly tied to the content of the courses and workshops to be developed, as well as secondary school teaching experience. The director is uniquely qualified because of his six-years experience as director of a highly successful, comparable center. Dr. McIntyre has been the coordinator of a inservice program which conducted between sixty and eighty 2-day workshops per year, and has done research on project-cost analysis as a consultant for Teacher Corps (Western Washington State College). In terms of the related master's degree program, Dr. McIntyre has been instrumental in the development of two successful programs, and has taught graduate research classes for the past fourteen years.

ii. Special Qualifications

Within the past five years, the College has received the following grants to train public and private elementary and secondary school teachers in mathematics, science, and computer learning:

1.	Mathematics, Computer, and Science Project for Elementary and Secondary Education	6/87-8/88	PDE*	$49,500
2.	Microcomputer Applications to Secondary Mathematics Curricula	7/85-6/86	PDE	$31,065
3.	Computer Instrumentation Applications for High School Science Laboratories	7/85-6/86 6/84-5/85 2/83-12/83	PDE PDE PDE	$10,000 $10,000 $20,871
4.	American Chemical Society Elementary School Chemistry Project	11/85-3/86	ACS Woodrow Wilson Foundation	$1,000 $2,500
5.	Technology Enrichment for High School Science and Mathematics Teachers	9/83-8/84	Ben Franklin Consortium & Advanced Technology Center	$18,425

*Pennsylvania Department of Education

The needs assessment conducted in January 1986, on which project #1 above was based, elicited responses from over 200 private and public school elementary and secondary schools. Although over 200 teachers participated in that project, more than 200 teachers who responded to the survey did not participate in the project because, at the time, the College was not able to grant graduate

credit. As a result of the College's favorable review by the Commission on Higher Education of the Middle States Association, the College is now able to offer graduate credit. Dr. McIntyre was hired to enable the College to meet the strong demand for graduate courses in education identified by the 1986 needs assessment.

The fact that the College conducted a national search to find the most competent and experienced Education Department Chair to develop its master's program and hired Dr. McIntyre at a higher rank and salary than any other faculty member previously hired from college funds attests to the college's commitment to establishing a first-rate degree program in mathematics, science, and computer learning.

The success of the projects listed above are documented by the fact that the College has received national recognition for their quality. The Council for the Advancement and Support of Education (CASE) awarded Allentown College the Bronze Medal in their 1986 High School/College Partnership Program. In the summer of 1987 the Pennsylvania Department of Education produced a video for state-wide dissemination, showing exemplary projects. Two of the six projects featured on the video are Allentown College projects #2 and #3 above. The teaching unit and disk "Probability: Actual Trials, Computer Simulations, and Mathematical Solutions" written by Dr. Walton as part of project #2 is now marketed by the National Council of Teachers of Mathematics for the benefit of the Mathematics Education Trust and has been disseminated to each of the fifty states and four foreign countries.

c. Budget and Cost Effectiveness (5 points)

A budget is attached (Appendix F). The College is willing to contribute fifty-four per cent of the cost, venders are expected to contribute eleven per cent, and the remainder, thirty-five percent, is being requested through the grant.

The goal in terms of costs for an instructional person-hour should be between 5 and 10 dollars. Data will be collected to establish the direct and indirect costs of running the program. This data will be shared with other institutions of higher education through conference reports, on-site presentations, and dissemination of reports on the center.

1. Adequate

The hardware being requested in this grant will be adequate for offering workshops with a maximum enrollment of twenty students. This is the number which has shown to be practical and appropriate for the type of inservice programs proposed. Using a scheduling arrangement developed at Saint Martin's College, through staggered starting times and rotation in and out of the laboratory, as many as three workshops can be held on the same day. This is important because, during the academic year, the only viable workshop day will be Saturday.

There may be some workshops that would benefit from having one student per computer for a long period of time. This can be accomplished by limiting enrollment or arranging for short-term loans of equipment from venders. Science equipment for science workshops will be available from the Allentown College departments of science. Mathematics manipulatives will be provided by the curriculum library.

2. Reasonable

The project will not require outside funding after the start-up period. The program will be able to expand and adjust its agenda to meet changing needs. Funds have <u>not</u> been requested for recurring costs. Because Allentown College is a private institution, it can adjust its fees and tuition to meet ongoing expenses. {NOTE: It is very difficult for a private college to fund start-up costs or to incur debt to support a new program, no matter how potentially useful it might be.}

The cost effectiveness of the project will be due, in part, to the discounts that are supplied to colleges from venders. Other sources will be approached to fund specific projects that can be coordinated with ongoing work at the center.

An independent college has some advantages over other organizations because many of the high costs associated with public education do not apply. In the state of Washington, the Saint Martin's College inservice program (which provided instruction to between 900 and 1000 teachers a year) cost approximately five dollars per hour of instruction to deliver, while the programs at the nine state centers delivered the same kinds of services at a cost of about twenty dollars per hour. At the Saint Martin's center, the cost was paid by the participants. The inservice supplied at the nine state centers was funded by the state.

d. Evaluation Plan (5 points)

1. Appropriateness

As part of the evaluation of the grant, the Pennsylvania Department of Education will be asked to recommend an Evaluation Team that will conduct two on-site visits and prepare a report. The Evaluation Team will visit the site sometime during the first six months of the project to discuss and evaluate the start-up process and the specific activities related to the objectives. A second site visit will take place one month after the first year of operation. The evaluation will be formative rather than summative because the center will be an ongoing operation beyond the grant period. The evaluation will help provide objective outside prospective, and may be of value to other colleges

All participants and visitors to the center will be asked to complete an evaluation form. Their names will be placed on a mailing list which will be used biannually to obtain feedback and recommendations concerning services.

2. Quantifiable Data

The following data will be collected and analyzed on a semi-annual basis: (1) Number of visitors; (2) Services provided; (3) Number of workshop participants; (4) Number of workshop guides produced; (5) Number of hours of instruction; (6) Number of public domain disks distributed; (7) Number of students in the master's degree program

e. Adequacy of Resources (5 Points)

The funds being requested in this proposal will provide the facilities, equipment, and supplies that could eventually accommodate an many as one thousand teachers per year in workshops, and over one thousand teachers in the preview center.

f. Improvement in the Quality of Instruction (25 points)

1. Objectives

The unit of product for the center will be the number of person-hours of instruction. During the first year, the goal will be 2700 person-hours of instruction (12 workshops x 15 participants/workshop x 15 hours of instruction/workshop) and 2400 person-hours of center use by visitors (100 visitors/month x 2 hours/visit x 12 months).

The quality and impact of the instruction will be determined by the surveys described above. In the ancillary activities, the goal will be to have thirty students admitted to the graduate program during the first year, and to distribute over five-hundred public domain disks to teachers. In terms of dissemination, the goal will be that at least ten workshop guides will be developed, and reports will be made at two national conferences.

g. National Significance (20 points)

1. National significance

The national need for preparing a technologically literate society is understood by all who examine our schools and their goals. Most agree that the best approach to technological literacy is to have technology integrated into the curriculum, and more importantly into the mathematics and science curricula. To this end, the proposed center will provide informal opportunities for instruction and preview, formal instruction though workshops, and advanced instruction through graduate course work and academic degrees.

One strand of the proposed graduate program -- computer education -- could not be offered without the grant. This degree program is perhaps the most significant, because only fifty-seven colleges or universities in the United States offer graduate degrees in the critical area of computer education.

2. Extent

i. Report on the National Commission on Excellence in Education

This proposal is consistent with the recommendation of the National Commission on Excellence in Education. The center will have as it overriding goal the application of technology to education through the preparation of well trained professionals at the local level providing these teachers with access to the latest technologies so that they can instruct others in the critical areas of mathematics, science, and computer learning.

Although the center will serve primarily as a resource for training of practicing teachers, the availability of the center will make it possible for the college to redesign its pre-service teacher education program to include the effective uses of technology, including its uses in teaching for subject-matter mastery.

ii. Specific National Needs

A. National Need

Underlying this entire proposal is the firm belief that there is a critical need to supply secondary school teachers with more vigorous academic training, and that these teachers can impact the schools in which they teach more readily than outside consultants or experts. The program will provide a viable link between the academic, research-based resources of colleges and universities and the practitioner.

A second underlying fact is that there is a need to provide teachers with instruction in applications of the newest classroom technology in an environment free of commercial bias. The ambience that can be created in a small college setting can play a significant role in the acceptance of the intervention. Small colleges understand the need to be service oriented, and teachers appreciate not having to contend with the bureaucracies so often involved in dealing with major research institutions.

B. Benefits

The short-term benefit of this project will be the timely development of a comprehensive technological center. Within five years approximately one-hundred teachers will be trained in the delivery of local inservice education in the areas of mathematics, science, and computer learning, and these teachers will be making school- or district-wide contributions.

The dynamics of the Saint Martin's College experience has lead to the development of a very significant network of computer educators which is a valuable resource to the teachers in the state of Washington. This project will build on that success by including in the core of the graduate program training in the delivery of inservice to adult learners.

C. Potential for Others

The potential of this project for other institutions is very clear. If a college of the size and significance of Allentown College can implement such a program, then it can provide valuable information to other colleges. The effectiveness of the Saint Martin's College program was instrumental in not only the establishment of the state network of centers, but each of the fifteen colleges and universities (plus some community colleges) in the state, sent individuals or teams to the center for information to develop their own centers. The argument for centers was very obvious: if Saint Martin's College, the smallest college in the state of Washington with the smallest education program, could have a viable center, then every department of education should be able to have one as well. The same center at the University of Washington would not have had the same impact on colleges in the state.

Another benefit that would accrue from this program is that it would cause other colleges to re-examine their own master's degree offerings for teachers. There is clearly a tendency for master's degree programs to have a pedagogical focused, with little or no consideration being given to a teacher's content or subject-matter base. The politics of most campuses is such that collaborative programs between academic departments and the programs are not supported. The Allentown College program will serve as a model for replication

iii. Creative Ways

The creative portion of this project lies in the interdependency of the major components which lead to a very cost-effective approach to providing inservice education. The utilization of school teachers to provide the inservice is not new. What is new is that the teachers will receive specific training in providing inservice, and that they will develop inservice projects under the direct supervision of college faculty who are experienced in this area. It should be noted that not all projects will necessarily be inservice workshops; graduate students will be encouraged to produce alternative means of providing training.

The second significant aspect of this program that will make it different than most other graduate programs for teachers will be the content component of the program. Teachers will be provided the opportunity to complete their academic preparation as science or mathematics teachers while pursuing their post-baccalaureate programs. It is a national problem that the academic preparation of many high school teachers does not extend beyond lower division courses in their major academic fields of teaching.

The third component that makes this program different is the fact that the core curriculum includes a course in educational technology for all participants. Each participants will become a user of the latest technology - interactive video, information retrieval, desktop publishing, etc. Each participant will become expert in the software of their own subject matter areas

iv. Builds on Current Research

All courses will be researched-oriented. By narrowing the focus of the graduate program to mathematics, science, and computer learning, it will be possible for the College to provide a thorough collection of periodicals and texts related to these topics.

v. Provides a Model

As stated several times in the narrative and in this segment on criteria, the project will serve as a model for integrating technology into the professional preparation of teachers. In addition to the programmatic model, data from the project will be used to generate a fiscal model for development of a comprehensive center. The third model developed will be teaching teachers about the available educational technology, while using that technology as a means of teaching them.

h. **Commitment** (10 points)

The college has already shown its commitment to implementing this program by hiring as a Chair for their Education Department a person whose background and experience, would support such a program. It was assumed that a master's degree program with a focus on mathematics, science, and computer learning would be the best way to impact the high school curriculum over the next fifteen to twenty years. The Chair was selected because of his strong background in science, mathematics, and computer science plus his outstanding and unquestionable track record in developing such programs. This grant proposal would provide the necessary resources to make the program possible, and would provide needed services to the region's high schools.

The proposed program of a comprehensive technology resource center and graduate program are consistent with mission of the College, and builds on the College's nationally recognized success in offering science, mathematics, and computer training to public and private school teachers in a wide geographic area.

Appendix A

SAINT MARTIN'S COLLEGE
MICROCOMPUTER RESOURCE CENTER
LACEY, WA 98503
MAY 1986

FACT SHEET

I. Background on Center

A. First graduate course in Computers in Education (Summer 1980)
B. First workshops for teachers (Summer 1981)
C. College and individual support - $50,000 (1981-82)
D. Murdock Foundation Grant - $50,000 (Winter 1982)
E. Graduate Program in Computers in Education (Summer 1982)
F. Opening of Microcomputer Resource Center (May 1982) - approximately 9000 visitors to date
G. Workshops (Spring 1982) - 2 workshops
H. Workshops (Summer 1982) - 14 workshops
I. Graduate Program (Summer 1982) - 15 students
J. Safeco Grant for business applications of microcomputers - $20,000 (Fall 1982)
K. Workshops (1982-83) - 62 workshops
L. Graduate Program (Summer 1983) - 40 students
M. First graduate of Master's Program in Computers in Education (August 1983)
N. Undergraduate major in Computers in Education (Fall 1983)
O. ESD 113 Inservice Contract (Fall 1983)
P. Workshops (1983-84) - 77 workshops
Q. Graduate Program (Summer 1984) - 55 students
R. MEd in Computers in Education granted (1983-84) - 4
S. Workshops (1984-85) - 53 workshops
T. NSF Institute - Junior High School Teachers (Summer-Fall 1985)
U. Establishment of Local Bulletin Board for Educators (Spring 1985)
V. Opening of LOGO Library (Spring 1985)
W. Graduate Program (Summer 1985) - 49 students
X. MEd in Computers in Education granted (1984-85) - 13
Y. Murdock Foundation Grant II - $125,000 (Fall 1985)
Z. ESD 113 Inservice Contract (Fall 1985)
AA. Installation of AppleTalk Network (January 1986)
BB. Installation of Ethernet (March 1986)
CC. Establishment of FIDO bulletin board (May 1986)
DD. Workshops (1985-86) - 74 workshops

2. Services Provided

A. Workshops and courses on campus and on-site (60-70 per year)
B. Staff development activities for schools and other groups (10-15 per year)
C. Conference reports and workshops (5-10 per year)
D. Access to commerical software for review and evaluation (8,000 programs)
E. Access to public domain software for review and copying (2,000 programs)
F. Hands-on experience on more than 19 different computer systems for Center visitors (over 9,000 in first 3 years)
G. Access to curriculum materials related to computers in education
H. Consulting Services
I. Access to computer-related programs and software for handicapped children

3. Ongoing Projects of Center

A. Collecting training materials for business and educational applications
B. Developing hardware collection to include interactive video
C. Developing evaluation process for software
D. Producing catalog and information retrieval system for instructional materials
E. Preparing workshops for trainers and teachers of physically handicapped children
F. Collecting materials for handicapped students listed in the Trace Center International Hardware/Software Registry
G. Developing sequencial series of courses and workshops in Computers in Education
H. Identification and training of instructors for inservice program
I. Developing public domain software depository
J. Developing preservice certification program for Computers in Education
K. Participating in Washington state computer's in education network

4. Staff

Dr. Pat McIntyre
Director

Mrs. Sharon Heath
Manager

Ms. Belinda Hawkins
Graduate Assistant

Mrs. Karen Morris
Graduate Assistant

5. Acknowlegements

Harvard, Columbia, and Saint Martin's College are the three leading educational resource centers in the country for computer hardware and software.

Michael Sherman, *Computers in Education*, Bates Publishing, Concord, Massachusettes, 1983

Saint Martin's College has the largest software collection on the West Coast (10,000 programs) and the second largest in the United States.

Electronic Learning, Jan-Feb., 1984

The Saint Martin's College Microcomputer Center is a model for the state.

Report to the Legislature
Dr. Frank "Buster" Brouillet,
Superintendent of Public Instruction,
Washington State.

The "best program in the area," "outstanding," with a "dedicated staff."

Donald K. Wile, "Computer Education ... in the greater Puget Sound Area," The Medina Foundation, Seattle, 1983

Appendix D

VITA
PATRICK J. MCINTYRE

Education:

B. Chem. Eng.	The Catholic University of America	6/56
M..S. (Chemistry)	Polytechnic Institute of Brooklyn	6/64
Ph. D. (Curr. & Inst.)	The University of Wisconsin	8/72

Teaching Experience:

College

Allentown College of St. Francis de Sales 1988 -
- Chairperson, Department of Education
- Professor of Education

Saint Martin's College 1979 - 87
- Professor of Education
- Director of Graduate Education Program (1980 - 87)
- Director of Teacher Education (1979 - 84)
- Director of Academic Computing (1982 - 87)

Western Washington University 1969 - 79
- Associate Professor of Chemistry and Education
- Associate Director of Teacher Corps Project (1975 - 79)

High School

High Schools in the Mid-West and East 1957 - 69
- Department Chairman, Administrative Assistant, Consultant & Science Teacher

Elementary

Principal & Science-Math Teacher 1974-75
- Bellingham, Wa (While on leave from Western Washington University)

Service Activities:

- Member of High Technology Educator's Network, Office of Superintendent of Public Instruction, Olympia, Wa
- Member of Task Force on Endorsement for Computer Science, Office of Superintendent of Public Instruction, Olympia, Wa
- Member of the American Chemical Society Division of Chemical Education on Computers in Chemical Education, 1984-86
- Member of the Computer Advisory Board, Educational Service District 112, Vancouver, Wa
- Member of the American Association for the Advancement of Science - Science, Books and Film Committee
- Chairman of Campus Computer Committee, Saint Martin's College
- Member of Executive Board, Washington State Council of Deans and Directors of Teacher Education, May, 1983 - Jan. 1984
- Member of Basic Education Skills through Technology (BEST) team, Office of Superintendent of Public Instruction, 1982-83
- Member of State Advisory Board for Gifted Education, Office of Superintendent of Public Instruction, Olympia, Wa, 1981-83

Recent Professional Activities:

- Participant, Mathematics and the Computer, National Council of Teachers of Mathematics, Santa Cruz, CA, July 31 - August 3, 1986
- Panel Member, "Status and Trends in Graduate Degree Programs in Computer Education", National Education Computing Conference, San Diego, CA, June 5, 1986
- The MacIntosh as a Tool for Teachers Workshop, Saint Martin's College, Lacey, Wa, 1986, 1987
- "CAI Research", Northwest Council of Computers in Education Conference, Seattle, WA, February 5, 1986
- "Recent CAI Research", Northwest Council of Computers in Education Conference, Eugene, OR, Feb. 8, 1985
- "Telecommunication Primer", Washington Council of Administrators of Special Education, Seattle, Wa, Dec. 9, 1984
- BASIC Programming Workshop: Graphics, Saint Martin's College, Lacey, Wa, April, 1984
- "Resources for the Instructional Media Staff", Tacoma Area Instructional Media Association, Saint Martin's College, March 26, 1984
- Introduction to PILOT Workshop, Saint Martin's College, Lacey, Wa, March, 1984
- "An Introduction to Software Evaluation", Evergreen Elementary School Faculty, Lacey, Wa, March 16, 1984

"A Review of Recent Educational Software", Tacoma Community College Computer Fair, Tacoma, Wa, Feb. 18, 1984

"On-Line Literature Searches", Northwest Council of Computers in Education Conference, Olympia, Wa, Feb. 18, 1984

Educational Software Evaluation Workshop, Northwest Council of Computers in Education Conference, Olympia, Wa, Feb. 17, 1984

"Computer Curriculum Planning", Franklin Pierce School District Administrators, Federal Way, Wa, Jan. 19, 1984

"Software Evaluation", Washington Council of Administrators of Special Education, Seattle, Wa, Dec. 10, 1984

"Authoring Languages: Writing Your Own Instructional Programs",Washington Council of Administrators of Special Education, Seattle, Wa, Dec. 10, 1984

"Computers in Special Education: What Resources Are Available For Getting Started?", Washington Council of Administrators of Special Education, Seattle, Wa, Dec. 9, 1984

BASIC Programming Workshop: Files, Saint Martin's College, Lacey, Wa, April, 1984

"The Computer Connection: Meeting the Needs of Teachers", Computers in Education Conference, North Texas State University, Denton, TX, Oct. 28, 1984

Publications: Teaching Computer Science, a textbook in progress.

"Turn Your Science Program Into a Butterfly", with John Miller, Science and Children, May 1977

"An Overview of a Planning Process for an Inservice Education Program: An Informational Booklet", with Herb Hite, Western Washington University, Bellingham, Wa, January 1977

"Planning for Inservice Education: A Process Guide", with Herb Hite, Western Washington University, Bellingham, Wa, January 1977 (ED 185024)

"Planning for Inservice Education: A Resource Guide", with Herb Hite, Western Washington University, Bellingham, Wa, January 1977 (ED 185031)

"Planning for Inservice Education: A Management Guide," with Herb Hite, Western Washington University, Bellingham, Wa, January 1977 (ED 185030)

"Planning for Inservice Education: A Monograph", with Herb Hite, Western Washington University, Bellingham, Wa, January 1977 (ED 183560)

A Planning Process for Inservice Education: A Filmstrip Presentation, Western Washington University, Bellingham, Wa, January 1977

"The Teacher-Designed Inservice Education Project at Western Washington University Teacher Corps", with Herb Hite and Nancy Hildebrand, in Inservice Education: Criteria For and Examples of Local Programs, (Ed. Roy A. Edelfelt), Western Washington University, Bellingham, Wa, 1977

"Costs, Benefits and/or Liabilities Model for the Western Washington University Teachers Corps Teacher Designed Inservice Project", Western Washington University, Bellingham, Wa, September 1976 (ED 129805)

"The Effect of Visual Devices Based on Bruner's Modes of Representation on Teaching Concepts of Electrostatics to Elementary School Children", with Jack Reed, Science Education, January-February 1976, pp. 87-94

"Students' Use of Models in Their Explanation of Electrostatic Phenomena", Science Education, October-December 1974, pp. 577-580

"The Model Identification Test: Perceptual Bias of Elementary School Children Using a Limited Verbal Evaluation Instrument", Science Education, July - August 1974, pp. 283-294

"Construction of Test Items to be Presented Via Motion Picture Film",with Rod Doran and Richard Green, Audiovisual Instruction, February 1974, pp. 52-56

"Hot Wheels", Science and Children, May 1974, p. 29

"Teaching Children Science", with John Miller, Jal Parakh, and John Whitmer, a locally produced book of readings, Western Washington University, Bellingham, Wa, 1973

Rubber Bands, Phenomena for Inquiries Series, Science and Children, January- February 1973, p. 33

"A Study of the Effectiveness of Three Types of Visual Devices on the Acheivement of Selected Theoretical concepts by Elementary School Children", unpublished doctoral dissertation, The University of Wisconsin, Madison, Wi, August 1972 (ED 100619)

"The Model Identification Test: A Limited Verbal Science Test," Science Education, July - August 1972, pp. 345-357

"Chemistry with Programmed Instruction", with Francis Oulette, The Catholic Educator, November 1965, pp. 46-49

"2-Phenyl-3-Chlorobenzoselenophene", unpublished master's thesis,The Polytechnic Institute of Brooklyn, Brooklyn, New York, 1964

"A Selenium Heterocyclic from the Reaction of Diphenyacetylene and Selenium Tetrachloride", with Reed Riley and Jud Flato, Journal of Organic Chemistry, April 1963, pp. 1138-9

Appendix E

VITA
KAREN DOYLE WALTON

Education:

Bachelor of Arts (Mathematics)	Vassar College	1965
Master of Arts in Teaching (Mathematics)	Harvard University	1966
Master of Arts (Mathematics)	University of Pittsburgh	1970
Doctor of Education (Higher Education Administration)	Lehigh University	1983

Teaching Experience:

College

Allentown College of St. Francis de Sales 1976 -
- Academic Dean (1986 -
- Director of Planning (1978 -
- Lecturer in Mathematics (1978 -
- Associate Dean (1980 - 86)
- Assistant to the Academic Dean (1976 - 80)

Muhlenberg College 1976 - 78
- Lecturer in Mathematics

Seton Hill College 1966 - 75
- Associate Professor of Mathematics
- Chair, Department of Mathematics 1970 - 75

High School

Newton High School 1965 - 66

Service Activities:

Director, Mathematics, Computer, and Science Project for Elementary and Secondary Educators, 1987 to present
Director, American Chemical Society/Allentown College Elementary School Science Project, 1985 - 86
Director, Computer Applications to Secondary Mathematics Curricula Project, 1985 - 86
Director, Computer Instrumentation Applications for High School Science Laboratories Project, 1983 - 86
Acting Chair, Department of Mathematics/Computer Science, Allentown College of St. Francis de Sales, 1981
Coordinator, Elementary and Secondary School Student Teachers of Mathematics
Coordinator, Allentown College Microcomputer Program, Ben Franklin Partnership
Faculty Advisory Committee for Teacher Education, Seton Hill College
Lehigh Valley Association of Independent Colleges Committee on Computing and Information Systems
Chair, Graduate Study Committee, Seton Hill College

Recent Professional Activities:

Presenter, "Computer Applications to Sequences and Series", Pennsylvania Council of Teachers of Mathematics Annual Meeting, Valley Forge, March 1988
Presenter, "Probability: Actual Trials, Computer Simulations, and Mathematical Solutions", Southeastern Regional Conference of the National Council of Teachers of Mathematics, Virginia Beach, November 1987
Presenter, "Computer-Assisted Calculus", Pennsylvania Council of Teachers of Mathematics Annual Meeting, Harrisburg, March 1987
Panel Member, Chairpersons' Workshop Conference, Middle States Association on Higher Education, Philadelphia, September 1986
Presenter, "Planning, Use of Research, and Accountability", Pennsylvania Association of Women Deans Annual Conference, Philadelphia, October 1986
Presenter, "Using the Computer to Teach Probability", Association of Mathematics Teachers of New York, Summer Workshop, State University of New York at Oswego, August 1986
Presenter, "Using the Computer to Teach Probability: A Hands-On Turn-On for the Teacher and Student!", National Council of Teachers of Mathematics 64th Annual Meeting, Washington, D.C., April 1986
Presenter, "Using the Computer to Teach Probability: A Hands-On Turn-On for the Teacher and Student!", Pennsylvania Council of Teachers of Mathematics Annual Meeting, Washington, D.C., March 1986

Publications:

"Evaluating Functions in Mathematics and Science Using Computer Interfacing". School Science and Mathematics, Accepted for publication 11/3/87
"Mathematics in the Year 2000: Artificial Intelligence and Expert Systems". 1988 Pennsylvania Council of Teachers of Mathematics Yearbook, Spring 1988
"The Discoverer of Non-Euclidean Geometry: Lobachevsky, Bolyai, or Gauss?". Consortium for

Mathematics and its Applications (COMAO), December 1988

"Integration: Numerical and Monte Carlo Techniques". New York State Mathematics Teachers' Journal. Accepted for publication 9/8/87

"Probability: Actual Trails, Computer Simulations, and Mathematical Solutions". Teaching unit and diskette published by the National Council of Teachers of Mathematics, October 1987

"Chemistry for 5th and 6th Graders --- from Plastic Laundry Basket 'Labs'". Journal of Chemical Education, August 1987

Eleven problems for the publication in the 1987-88 volume of the Mathematics Teacher. Accepted for publication 9/28/86

"Microcomputers and the Mathematics Curriculum". 1987 Pennsylvania Council of Teachers of Mathematics Yearbook, Spring 1987

Review of the book Gender Influences in Classroom Interaction, edited by Wilkinson and Marrett, Journal of Educational Equity and Leadership, Spring 1987

"Computer-Assisted Polar Graphing". Mathematics Teacher, March 1987

Review of "Mathematics Software", by D.C. Heath, Journal of Computers in Mathematics and Science Teaching, Spring 1987

"Teaching Probability; The Computer is the Handmaiden of Mathematics". Journal of Computers in Mathematics and Science Teaching, Spring 1986

"Microcomputers, Monte Carlo, and Mathematics".1986 Pennsylvania Council of Teachers of Mathematics Yearbook, Spring 1986

"'Hands On' This Summer at Allentown College". Micronet, October 1985

"Microcomputer Interfacing - Who, What, Where?". Collegiate Microcomputer, Spring 1986

"Computers in the Science Curriculum". Electronic Learning, February 1985

"Computers Make Strange . . . Lab Fellows". The Computing Teacher, May 1984

"Have Micro, Will Travel". The Forum for Academic Computing and teaching Systems, January 1984

APPENDIX F
BUDGET

SALARIES	MONTHLY			TOTAL COST	ALLENTOWN COLLEGE	VENDERS	GRANT
DIRECTOR	3700.00	0.5 FTE/12 MONTHS		22,200.00	16,650.00	0.00	5,550.00
CENTER MANAGER	2100.00	0.25 FTE/12 MONTHS		6,300.00	0.00	0.00	6,300.00
COMPUTER INSERVICE	2100.00	0.25 FTE/12 MONTHS		6,300.00	0.00	0.00	6,300.00
STUDENT HELP	3.35	120 HRS/50WEEK		20,100.00	20,100.00	0.00	0.00
STRAND COORDINATORS	2500.00	0.25 FTE/2 MONTHS		6,250.00	0.00	0.00	6,250.00
SECRETARY	1000.00	0.25 FTE/12 MONTHS		3,000.00	3,000.00	0.00	0.00
SALARY SUBTOTAL				64,150.00	39,750.00	0.00	24,400.00
BENEFITS (15%)				9,622.50	5,962.50	0.00	3,660.00
SALARY TOTAL				73,772.50	45,712.50	0.00	28,060.00
CENTER	1	600 sq.ft		33,000.00	33,000.00	0.00	0.00
ROOM PREPARATION				1,000.00	1,000.00	0.00	0.00
FURNITURE							
Workstations	30		300.00	9,000.00	0.00	0.00	9,000.00
Storage Area	1		2,000.00	2,000.00	0.00	0.00	2,000.00
Classroom	1	Projectior	1,500.00	1,500.00	0.00	0.00	1,500.00
Miscellaneous				1,000.00	0.00	0.00	1,000.00
SECURITY				1,500.00	0.00	0.00	1,500.00
FACULTY WORKROOM	1	110 sq.ft.		6,050.00	6,050.00	0.00	0.00
OFFICES	2	110 sq.ft.		12,100.00	12,100.00	0.00	0.00
FACILITIES SUBTOTAL				67,150.00	52,150.00	0.00	15,000.00
OPERATING EXPENSES							
TELEPHONE				1,000.00	1,000.00	0.00	0.00
POSTAGE				3,000.00	3,000.00	0.00	0.00
PRINTING				5,000.00	5,000.00	0.00	0.00
TRAVEL				2,000.00	1,000.00	0.00	1,000.00
CENTER EQUIPMENT	NUMBER	UNIT	DISCOUNT				
APPLE II SERIES CLUSTER	OF UNITS	COST					
COMPUTER	12	1,000.00	0.3	12,000.00	7,000.00	3,600.00	1,400.00
PRINTERS	5	800.00	0.4	4,000.00	1,440.00	1,600.00	960.00
NETWORK	1	4,000.00	0.4	4,000.00	0.00	1,600.00	2,400.00
MACINTOSH CLUSTER							
COMPUTER - MacPlus	12	1,800.00	0.4	21,600.00	0.00	8,640.00	12,960.00
COMPUTER - SE	2	3,600.00	0.4	7,200.00	0.00	2,880.00	4,320.00
LASER PRINTER	1	6,000.00	0.4	6,000.00	0.00	2,400.00	3,600.00
PROJECTOR	1	2,000.00		2,000.00	0.00	0.00	2,000.00
MISCELLANEOUS				2,500.00	1,250.00	0.00	1,250.00

IBM CLUSTER						
COMPUTER	12 1,000.00	0.20	12,000.00	12,000.00	0.00	0.00
PRINTERS	3 700.00	0.20	2,100.00	2,100.00	0.00	0.00
NETWORK	1 3,000.00	0.20	3,000.00	2,400.00	600.00	0.00
PERIPHERALS						
CD-ROM PLAYERS	2 2,500.00	0.00	5,000.00	0.00	0.00	5,000.00
SCANNERS	2 3,000.00	0.00	6,000.00	0.00	0.00	6,000.00
TELECOMMUNICATIONS	3 400.00		1,200.00	0.00	0.00	1,200.00
CARD READERS			3,500.00	0.00	0.00	3,500.00
ADAPTIVE DEVIVES						
FIRMWARE CARDS	3 400.00	0.00	1,200.00	0.00	0.00	1,200.00
SPEECH SYNTHESIZERS	2 200.00	0.00	400.00	0.00	0.00	400.00
KEY GUARDS	2 150.00	0.00	300.00	0.00	0.00	300.00
HEAD WANDS	2 125.00	0.00	250.00	0.00	0.00	250.00
TOUCH SCREENS	1 300.00	0.00	300.00	0.00	0.00	300.00
SCANNER	1 1,000.00	0.00	1,000.00	0.00	0.00	1,000.00
MISCELLANEOUS			4,000.00	2,000.00	0.00	2,000.00
ADMINISTRATIVE/FACULTY						
COMPUTERS	2 3,600.00	0.4	7,200.00	0.00	2,880.00	4,320.00
LASER PRINTER	1 6,000.00	0.4	6,000.00	0.00	2,400.00	3,600.00
SOFTWARE						
APPLE II/GS			9,000.00	2,250.00	4,500.00	2,250.00
MACINTOSH			3,000.00	750.00	1,500.00	750.00
IBM			3,000.00	750.00	1,500.00	750.00
PUBLIC DOMAIN			2,000.00	500.00	1,000.00	500.00
SPECIAL EDUCATION			5,000.00	1,250.00	2,500.00	1,250.00
DATA BASES (CD-ROM)			4,000.00	2,000.00	0.00	2,000.00
CURRICULUM MATERIALS						
PERIODICALS			5,000.00	5,000.00	0.00	0.00
TEXT BOOKS			1,500.00	1,500.00	0.00	0.00
SCIENCE MATERIALS			2,500.00	2,500.00	0.00	0.00
MATH MANIPULATIVES			4,000.00	2,000.00	0.00	2,000.00
SUPPLIES						
DISKS			1,000.00	500.00	0.00	500.00
PRINTER SUPPLIES			2,500.00	1,250.00	0.00	1,250.00
MISCELLANEOUS			1,000.00	500.00	0.00	500.00
CONSULTANTS						
WORKSHOP DEVELOPERS	7 1,000.00		7,000.00	0.00	0.00	7,000.00
EVALUATION						
HONORARIUM & EXPENSES			3,500.00	0.00	0.00	3,500.00
DIRECT COSTS			318,672.50	156,802.50	37,600.00	124,270.00
INDIRECT COSTS			31,867.25	31,867.25	0.00	0.00
TOTAL			350,539.75	188,669.75	37,600.00	124,270.00

APPENDIX B

PROSPECTUS
FOR

INTRODUCTION OF THE
MASTER OF EDUCATION DEGREE

PROSPECTUS
for

INTRODUCTION OF THE MASTER OF EDUCATION DEGREE

at

ALLENTOWN COLLEGE
of
SAINT FRANCIS de SALES

Dr. Pat McIntyre
March 1989

Pennsylvania Department of Education
Master's Degree Program Review Visit
March 2-3, 1989

Schedule of Events

March 2

5:00 Team Meeting — Bethlehem Hotel, Bethlehem
Dr. Jerome Kern, Pennsylvania Department of Education
Dr. Arthur Breyer, Chemistry, Beaver College
Dr. Edward Lotto, English, Lehigh University
Dr. John Kerrigan, Mathematics/Computer Science, West Chester University
Dr. June Trudnek, Mathematics/Computer Science, Bloomsburg University,

6:30 Dinner — McShea Center, Campus
Visiting Team
Fr. Daniel Gambet, President
Dr. Karen Walton, Academic Dean/Mathematics
Dr. Pat McIntyre, Education
Dr. Roger Berg, Chemistry
Mr. John Meinke, Computer Science
Fr. Robert McGilvray, Education
Mrs. Joan McIntyre, Librarian

8:00 Team Meeting — Bethlehem Hotel, Bethlehem

March 3

8:30 Meeting with President Gambet — President's Conference Room, Dooling Hall
Visiting Team
Fr. Daniel Gambet, President
Dr. Karen Walton, Academic Dean/Mathematics
Dr. Pat McIntyre, Education
Dr. Roger Berg, Chemistry
Mr. John Meinke, Computer Science
Dr. Ken Fifer, English

9:00 Program Overview — President's Conference Room
Dr. Karen Walton
Dr. Pat McIntyre

9:30	Tour of Library/Educational Technology Center	
10:00	Individual Conferences with Program Coordinators	
	Dr. Karen Walton, Academic Dean/ Mathematics	Room 153, Dooling Hall
	Dr. Pat McIntyre, Education Computers in Education	Room 263, Dooling Hall
	Dr. Roger Berg, Chemistry	Room 226, Dooling Hall
	Mr. John Meinke, Computer Science	Room 11-2, Dooling Hall
	Dr. Ken Fifer, English	Room 357, Dooling Hall
	And other as requested	
12:00	Lunch (working)	President's Conference Room
1:00	Addition conferences as needed	
2:00	Team Meeting	President's Conference Room
3:00	Exit Interview	President's Conference Room

Visiting Team
Fr. Daniel Gambet, President
Dr. Karen Walton, Academic Dean/Mathematics
Dr. Pat McIntyre, Education
Dr. Roger Berg, Chemistry
Mr. John Meinke, Computer Science
Dr. Ken Fifer, English
Fr. Robert McGilvray
Mrs. Joan McIntyre, Librarian

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1. Proposal

The Education Department of Allentown College of Saint Francis de Sales, in collaboration with the departments of Chemistry, English, Mathematics, and Computer Science, proposes to offer programs of advanced study in content and pedagogy leading to Master of Education Degrees (M.Ed.). Each program will have two major components: (1) a series of required courses to be offered through the Education Department, and (2) a program of content courses offered through academic departments.

The programs being requested for approval at this time are:

Master of Education in Chemistry
Master of Education in Computers in Education
Master of Education in Computer Science
Master of Education in English
Master of Education in Mathematics

The goal is to have the program approved in early 1989 and the initial courses offered in the summer of 1989.

2. Rationale

It is widely accepted that teachers in the pre-college setting, especially at the high school level, require more academic preparation than is often provided by their undergraduate degree and certification programs. It is a common trend among professional groups and certification agencies to endorse the idea that teachers should be required to hold master's level degrees as a sign of professional commitment and competency. Several states require a master's degree for permanent certification, and some states are considering making a master's degree part of the initial teaching credential.

The Holmes Group, a national panel of prominent educators, in its recommendation for the preparation of teachers, has concluded that all teachers have training through the master's degree level.

In the Commonwealth of Pennsylvania, teachers are required to continue their professional preparation throughout their career. Salary schedules throughout the commonwealth include special incentives for teachers to acquire a master's degree. In some cases, the salary differential for a master's degree is as high as three thousand dollars per year. If for no other reason than financial security, the trend is for all teachers to acquire a master's degree or its equivalent.

In keeping with these trends, and in recognition of the wide support for increased professional training for the classroom teacher, the Education

Department is proposing that it coordinate a graduate degree program for practicing high school teachers.

The model used in this proposal depends on the individual departments of the College having a willingness to participate in the development of the program and a commitment to provide the staffing. The Education Department will coordinate the scheduling of classes and the general administration, but it will rely on the departments to provide the necessary insight and professional awareness if their programs are going to meet the needs of teachers.

What is called for is a collaborative effort. It is highly unlikely that any one department could mount a graduate degree program of sufficient size to be financially viable, but a group of small programs of between five and ten students each can be viable provided they have some common elements. In time, individual departments might elect to provide complete programs of study leading to degrees of master of arts or master of science. Meanwhile a program which focuses on teachers and their special needs is more likely to be marketable.

3. Mission Statement

The College should provide specialized study in the area of academic and professional training of teachers is clearly in the Catholic and Salesian traditions and in keeping with the College's mission statement. The program that is being proposed should be looked upon as a natural extension of the existing programs that prepare teachers.

The program will be developed with the objectives that have been established for graduate study at the College, namely,

1. To develop specialized competence in a field of study so that graduates might provide leadership and make significant contributions to their field;
2. To develop the skills necessary for advanced research in their specialized fields;
3. To enhance the formation of a Christian conscience as it applies to the ethical problems of their fields of interest.

4. Needs Assessment

A. National Priorities

The program being proposed is consistent with the mandates for secondary education which have were developed by the National Commission on Excellence in Education, as reported in A Nation at Risk: The Imperative for

Educational Reform.[1]

The program will focus on developing the academic and technological skills of teachers, especially those in the areas of science, mathematics, and computer science, so that these teachers will be better prepared to teach those academic programs that are being demanded of our schools.

B. Area Programs

A review of the graduate programs offered by colleges within fifty miles of Allentown College of Saint Francis de Sales showed only three graduate programs for teachers at the master's degree level. Those programs emphasize coursework in the traditional areas of educational theory and pedagogy rather than the development of skills and subject matter competencies. None of the local master's degree programs has a focus on the utilization of educational technology across the curriculum.

C. Marketing Survey

In December 1988, all high school and junior high school principals (n= 196) within a fifty mile radius of Allentown College were contacted for a telephone survey. Eighty-six percent (166) completed the survey.

The overwhelming majority of the principals indicated that a graduate programs in the areas of Mathematics, Computer Education, Computer Science, Chemistry, and English offered at Allentown College would be useful to their teachers. See Figure 1.

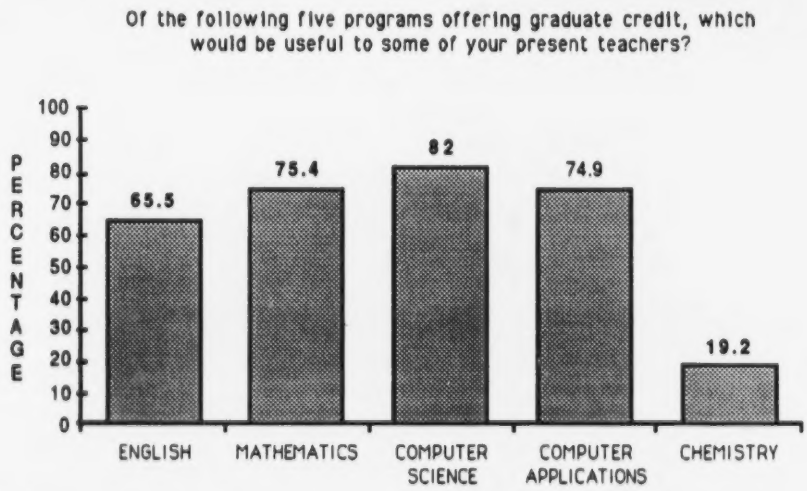

Figure 1: Interest in Graduate Courses for Present Staff

[1]A Nation at Risk: The Imperative for Educational Reform, Superintendent of Documents, U.S. Government Printing Office, Washington, D.C., 1983

In response to a series of questions concerning the more specific interest of high school teachers in computer/technology related programs there was an expression of very high interest in most areas. See Figure 2.

This data, plus additional information obtained from more opened ended questions, lead to the conclusion that there is a need for additional opportunities for graduate education program in the area, and that Allentown College could develop such a program with expectations of success.

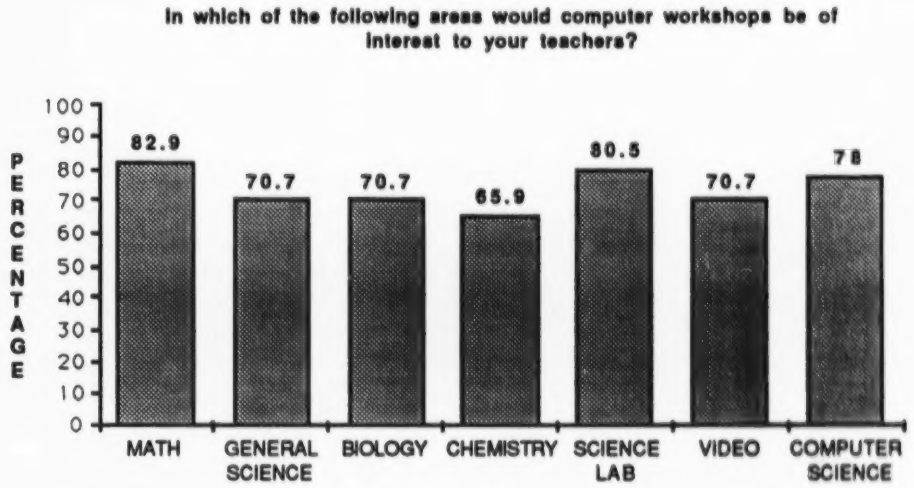

Figure 2: Interest in Technology Workshops for Staff - High School

D. Mail Survey

The telephone survey data was consistent with information obtained in an earlier survey conducted in January 1986 in preparing a grant proposal for the Pennsylvania Department of Education. At that time more than 200 teachers indicated that they would not participate in an inservice program unless the academic work carried graduate credit. Although over 200 hundred teachers did participate in the project, the pool of potential applicants was almost half of what it would have been had graduate credit been available.

The results of the mail survey were instrumental in the College's decision to seek graduate status, and to gain accreditation for a select group of graduate programs.

E. Alumni

A survey of all Allentown College certification students from 1974 to date was conducted. Although the return of the surveys has been limited -- 10 % -- the response has been extremely supportive of having a master's degree program at the College. Eighty-five percent of the respondents expressed a

willingness to serve as readers of any proposals prepared in preparation for the project. Thirty-eight percent indicated an interest in being candidates for the degree. This is a particularly high percentage considering that many of the graduates had already completed their certification requirements and hold advanced degrees.

The alumni survey, and a survey of local Chemistry teachers, have provided information that was used in developing the general format and structure of the proposed programs.

5. Program Description

The specific objectives for the program will be to assist teachers to:

1. Increase their subject matter knowledge and competence;

2. Become more aware of the research concerning the pedagogical aspects of the curriculum and how it is applied to the classroom;

3. Increase their skills in the use of technology as a means of effecting greater impact through increased productivity, motivation, and efficiency;

4. Become more effective leaders in their schools through a better awareness of the needs of adult learners.

The proposed master's degree program will have three major components: content, professional knowledge, and technical skills. The detailed organization plan for each graduate program, the core curriculum, and course syllabi can be found in Appendix A.

A. Content

Although the graduate degree will be coordinated by the Education Department, the programs have as one of their four components an academic program designed by a sponsoring department. The programs will improve the content-knowledge base of the participants in those areas of their respective disciplines closest to the content in the high school environment.

Wherever possible, the content courses will make use of the technology that is available to them through the federally funded technology center (described below) located in the Trexler Library. The program director will work with individual instructors to insure that maximum use is made of the available technical resources. The content component in each program will be four courses or twelve semester hours plus a master's degree project. Each sponsoring department has determined the course requirements and the departments will determine who will have primary responsibility for teaching the

courses and workshops offered by their departments subject to the approval of the Vice President for Academic Affairs. Vita for current faculty and adjunct professors who have been identified as instructors can be found in Appendix B.

Each student in the program will have an advisor from an academic department who will be responsible for approving the student's course of study. The advisor will serve as chairperson of the graduate education committee which will oversee the student's master's degree project.

Some departments may choose to share certain courses with other programs as a means of increasing the student pool.

Each candidate for a degree must demonstrate advanced skills and understanding through the completion of a master's degree project . This will be a synthesizing aspect of the program and it typically will be started only after half of the course work has been completed.

A candidate for the degree will identify an educational need and will produce an educational product addressing this need. The product will be evaluated through collegiate review and field testing.

B. Education

The education component of the program will focus on (1) the research base for instruction and (2) the use of technology for the acquisition of information. Students will be taught analytical skills for the diagnosis of research and techniques for information retrieval, data-base management, and communication processes appropriate to schools in a technologically-based society. In a course on the curriculum, students will be made aware of the various approaches to curriculum development.

The Education Department courses will be referred to as the core courses. The courses that make up the core will be:

- ED 501 Introduction to Graduate Studies
- ED 502 Advanced Educational Psychology
- ED 504 Philosophical and Sociological Aspects of Education
- ED 506 Curriculum in the Schools
- ED 508 Psychology of the Adult Learner

Every effort will be made to make the core curricula as practical as possible. Assignments, projects, and laboratory experiences will be incorporated into each course with a view toward direct application or insights into the working environment of the students.

The staffing of these courses will be the responsibility of the Education Department. Faculty members from other departments who will be willing to

teach one or more of these courses will be identified. Outstanding high school teachers may be called upon to teach in areas of their expertise. Tentatively, two regular faculty have been identified as instructors for two of the core courses.

A unique component of the graduate program will be the inclusion of a course in "training" in which participants will be introduced to the research on adult learners and taught skills for working with adults and designing instructional programs for teachers. It is anticipated that many of the master's degree projects will be to develop instructional programs for other teachers, including science and mathematics instruction for elementary school teachers. The course in adult learning will be part of the core curriculum and it will be administered by the Education Department.

A course in adult learning might be attractive to students in other master's degree programs in the College because all managers and supervisors require some skill in the training of adults, and this aspect of their role is often not addressed in their formal training.

C. Technology

The application of technology to the classroom will be an overriding and unique theme of the program. All participants will be expected to demonstrate an improvement in their ability to apply technology to the classroom, and they will be expected to have or develop skills in word processing, database management, spreadsheets, on-line communications, database searching, presentation software, desktop publishing, interactive video, etc. These same skills will be utilized as appropriate throughout the curriculum.

Teachers in the program will have the opportunity to choose from a variety of workshops which will be designed for professional skill development. Candidates for the degrees, with the permission of their advisor, will be allowed to take up to six workshops as part of their program. Some topics that might be used as the basis for a workshop are:

- Word Processing
- Data Base Searching
- Presentation Software
- Database Development
- Telecommunications
- Spreadsheets
- Video Production
- Desktop Publishing
- Photography
- Graphic Design

Workshops will be taken for graduate credit only with the approval of the graduate student's advisor. A tentative list of workshops for each of the

programs is presented in the organizational section below.

[A workshops program is being developed through the computer inservice program that is part of the same federal grant which is funding the development of the master's degree programs. The workshops will provide degree candidates with the opportunity to develop their teaching and support skills at times other than summer sessions.]

6. Resources

The proposed programs are being planned to minimize any negative impact on present College programs. Classes will be scheduled during evenings, weekends, and summer sessions. One of the incentives for the program is to make better use of the College facilities during the summer. It is anticipated that we could have from 15 to 50 full-time graduate students on campus during the first summer, and as many as 100 students in three years.

A. Physical Plant

a. Housing - A feature of the programs will be that teachers will be able to live on campus during the summer session. The availability of excellent living accommodations should be very attractive to many teachers. Students will be encouraged to live on campus during the week. The scheduling of classes will take into account that most teachers will like to have some long weekends for family and recreational needs.

b. Classrooms - During the academic school year no graduate courses will be scheduled for the normal school day. If enrollment warrants, at some point one or two graduate courses might be offered in the evening during the school year for teachers who can commute.

The workshops, which may complement the master's degree programs, will require the utilization of some classrooms on weekends during the school year. This will mean the use of three classrooms and the technology center on Friday evenings and Saturdays.

B. Technology Center

The federal grant provides funds for the development of a technology center for training teachers in the areas of mathematics, science and computer science. The goals of the center are shown in Figure 3.

Although the center will be open approximately sixty hours per week, use by teachers will normally be during evenings and weekends. At other times the center and all its resources will be available to the college community.

a. Microcomputers - The federal grant will allow the education department to staff and equip the center with a variety of microcomputers

and related hardware. The funding is tied to the master's degree programs and a workshop program for teachers. The use of the center will be one of the unique characteristics of the master's degree program.

b. Software Collection - A component of the federal grant is the establishment of a software depository for instructional programs. It is expected that the federal funding can be used as leverage to promote the establishment of a large collection of materials which can be used throughout the graduate program.

c. Workshop Program - The federal grant is supplying funds for the establishment of an inservice program for teachers. The workshops developed for this program may be used by teachers to meet requirements for the graduate program.

d. The Physically Disabled - The center will have as part of its equipment a depository of adaptive hardware that makes microcomputer technology accessible to the physically disabled. The primary purpose of this equipment is for the training of teachers, but the equipment will be available to any disabled student enrolled at Allentown College.

C. Library

The resource that will be significantly impacted by the graduate programs will be the library. The quality of the programs will be directly tied to the availability of information, and the ability of the faculty to teach students how to get access to this information. Information retrieval and analysis will be a major component of the introductory graduate course (Introduction to Graduate Study).

a. ERIC - Education students need to have access to the Educational Resources Information Center (ERIC), which provides the only systematic approach to educational information. The College will provide access to all searching capabilities of the ERIC system, and access to the documents deposited in the system. The most costly item in the proposed budget is the acquisition of the ERIC collection. This proposal includes a request for the systematic purchase of the ERIC collection.

b. Periodical Collection - The library already has an excellent periodical collection, but it can be expected that development of a new set of programs will necessitate the building of the collection of journals which focus on the research aspects of the various programs. As programs are proposed the development of the Library's resources must be established.

c. Library Audiovisual Center - No immediate effect or impact is projected for the media center.

d. Library Word Processing Center - The Macintosh laboratory will be a vital part of the program. The center includes microcomputers, databases, and printing capabilities. It will be a significant laboratory for students working on projects and assignments.

e. Curriculum Collection - This portion of the library will need to be expanded to accommodate the materials that will become available through the grant.

7. Schedule

The program will be essentially a summer school program with the possibility of some coursework being offered during the school year when enrollment and student interest warrant it. Each sponsoring department must be committed to offer courses in a cycle which will permit a student to complete the course work during three summer sessions, and/or provide opportunities for independent study during the academic year that will meet this time frame.

The number of courses that might be offered for a particular program will be determined by the number of students enrolled in the program. Every effort will be made to keep class size between ten and twenty students, but this may not be possible during the first few years of the project. The anticipated small class size for some departmental courses will be compensated for by the larger classes in the required core courses.

A department offering four or more departmental courses will typically schedule one each summer on a three-year cycle, and add additional courses as enrollment warrants. If a department were to offer six courses, then two different courses might be offered each summer on a three-year cycle. During the start-up phase of the program, a single program course will be offered during the first summer unless there is clear evidence that there will be sufficient students to warrant a second course.

Initially the educational core and the required courses will be offered on a two-year cycle in order to insure sufficient coursework for any student wishing to complete his/her course work in three years. At the same time it will provide some flexibility in the sequence of courses.

A staffing matrix and a schedule of anticipated classes for the first five years is presented in Appendix C.

8. Project

An aspect of the proposed model that may be different from other graduate programs will be the project. Candidates for the degree will produce some tangible product that will demonstrate that they have been able to apply

the knowledge and skills they have learned to a real situation. The project has many of the features of a research project or thesis, except that it does not require an experiment or a research paper. The idea is to produce a product which meets an educational need.

A project might be characterized in the following way:

- The nature of the project will be such that it will demonstrate advanced competencies related to a student's area of specialization.
- The development of the product will be something that goes beyond the skills and responsibilities that the candidate had prior to participation in the graduate program.
- The project will lead to a usable product, e.g., a curriculum guide, an instructional device, a teacher's guide for a workshop, a computer program.
- The product must be field-tested to establish validity.
- The student's project should make a contribution to the candidate's professional development.
- The project must be planned in collaboration with and with the approval of the candidate's advisor. A project cannot be approved on an *ex post facto* basis.

9. Enrollment Estimates

Enrollments for the proposed program are based on an analysis of data collected in the needs assessment, and the following parameters:

- Five programs the first year, two additional programs in year two, and one more program in year three. [The addition of programs in year two and three will be contingent upon separate approval of the Pennsylvania Department of Education.]
- The average number of students per program at start-up will be five.
- A slight increase in enrollment each year for the first five years.

Based on these assumptions the anticipated enrollments trends are shown in Figure 4.

Detailed information on the enrollment projections can be found in Appendix D.

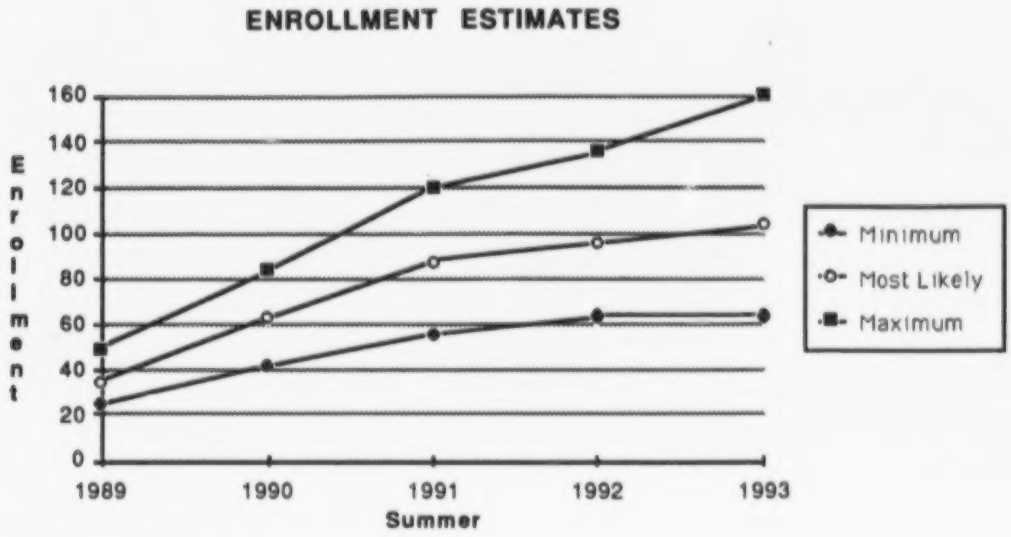

Figure 4: Course Enrollments Estimates

10. Budget

The start up costs for this proposed program should be met by the tuition raised and the federal grant for the establishment of the Technology Center for Excellence in Science, Mathematics, and Computer Science.

As is shown in Figure 5, the net income from the program will be marginal during the first two years, but should increase steadily thereafter. The best estimate is that the program will yield a net income of one-hundred thousand dollars by the end of the fifth year. Under the "worst case" scenario, the net income after five years will level off at about forty-thousand dollars.

These estimates do not take into account income from workshops, tuition paid by students taking courses, who are not in the graduate program, nor income that accrues to the College through room rentals, food services, and bookstore sales.

Net income is based on an assumed tuition rate [$200.00/credit hour], a fixed salary schedule [$1000.00/credit hour] and guaranteed course offerings [one core course and one course from each program/summer]. Details on the budget can be found in Appendix D.

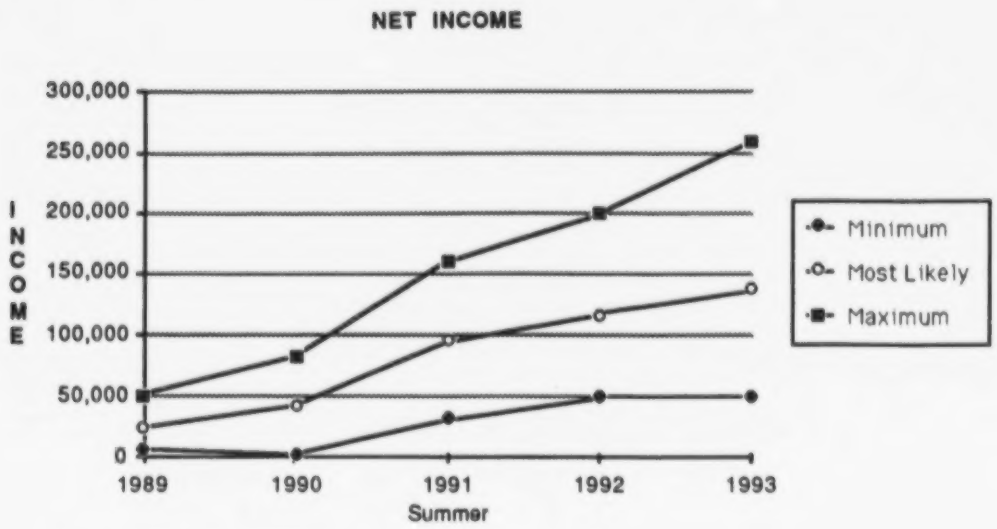

Figure 5: Net Income

11. Program Administration

The program will be headed by the chair of the Education Department who will report to the Vice President for Academic Affairs. A committee of not less than six faculty members will serve as the Education Programs Committee on Admissions and Academic Standards. One committee will service the five graduate programs. The five program coordinators will be members of the Education Programs Committee on Admissions and Academic Standards. Additional members will be appointed by the Vice President for Academic Affairs.

The organizational plan for administering the master of education program is shown in Figure 6 . The committee structure has been developed according to the guidelines provided for the graduate program committee structure.

A. Education Programs Committee on Admissions and Academic Standards

a. Purpose:

The purpose of the Education Programs Committee on Admissions and Academic Standards is to exercise oversight of the department's graduate program and to admit qualified students.

b. Membership:

The Director of the Education Graduate Program and the Program Coordinators for each of the master of education programs will be members. Other members of the Committee shall be determined jointly by the Director of the Education Program and the Chairs of the participating departments in consultation with the Vice President for Academic Affairs. Members must ordinarily be teaching graduate courses in the program. There should be at least one graduate student but not more than two on the Committee.

c. Responsibilities:

i. Review applications of those seeking admission to the graduate program.

ii. Admit applicants who meet the standards set by the Committee and by the Graduate Council.

iii. Recommend changes in admissions criteria and procedures to the faculty of the Department. The Department then submits these with its own recommendations to the Graduate Council.

iv. Conduct an annual evaluation of the graduate program to assure and enhance its quality.

v. Review the graduate curriculum as indicated by evaluations and by changes in the profession that the program is intended to serve.

vi. Make recommendations for graduate elective courses to those faculty who teach in the graduate program.

å. submit courses to Vice President for Academic Affairs for approval.

ß. circulate to other graduate programs in the College as information.

vii. Make recommendations for library acquisitions and notify other graduate programs.

viii. Cooperate with faculty of other graduate programs in the College in developing graduate courses that are mutually beneficial.

ix Review annually academic policies and procedures and recommend any needed changes to the programs faculties. Submit changes in academic policies and procedures to the Graduate Council. The Council in turns submits these with its own recommendation to the Vice President for Academic Affairs and the President for approval.

x. Review requests from students who desire waivers of the academic policies set by the Committee. Actions on these requests are to be sent to the Vice President for Academic Affairs for his approval. The Vice President may seek an advisory opinion from the Graduate Council.

The Education Programs Committee on Admissions and Academic Standards is <u>not</u> a standing committee of the College.

B. Program Director

The Program Director will have the following responsibilities:

1. To coordinate the scheduling of classes.
2. To recommend the hiring of all faculty and staff.
3. To chair meetings of the Education Programs Committee on Admissions and Academic Standards.
4. To approve petitions for all graduate courses and workshops.
5. To prepare and administer the budget for the graduate education program.
6. To coordinate all graduate course and workshop offerings with the Allentown College Office of Continuing Education (ACCESS).
7. To review course evaluations.
8. To schedule courses and workshops.
9. To serve on the Graduate Council.

C. Program Coordinator

A Program Coordinator will have the following responsibilities:

1. To recommend instructors to the Program Director.
2. To prepare course calendars.
3. To serve on the Education Programs Committee on Admissions and Academic Standards.
4. To initiate petitions for new courses and workshops.
5. To assist program advisors in developing graduate committees for student projects.

D. The Technology Center Advisory Committee

The Technology Center Advisory Committee will serve as advisors to the Program Director on matters of curriculum, computer applications, and program marketing.

12. Policies

A. Admissions

Students are admitted to the program upon the recommendation of the Education Program Committee on Admissions with the concurrence of the graduate advisor for the program or area of specialization.

The following materials are required for admission consideration:

- A completed graduate program application form.
- Three letters of recommendation, including a recommendation from an immediate supervisor.
- Official transcripts from all colleges and universities attended since graduation from high school.
- A score from either the Graduate Record Examination (General Test) or the Miller Analogies Test, taken within the last five years.

Application materials are submitted to the individual program coordinator who will be responsible for developing the candidate's file. An interview with the program coordinator is highly recommended as the first step in the application process. The coordinator will submit a report, and possibly a recommendation based on the interview, to the Education Programs Committee on Admissions and Academic Standards as part of the applicant's file.

Normal requirements for admission into the program are:

- A baccalaureate degree from an accredited institution.
- Completion of a teacher certification program acceptable to the Commonwealth of Pennsylvania.
- At least one year of work experience relevant to the field of Education.

B. Credit Transfer

The maximum number of credits that can be transferred into the program will be six. All requests for transfer of credits must be made through the student's coordinator and approved by the graduate program director. Students will be expected to document the coursework.

C. Credit Load

The maximum number of credits applicable to a graduate degree that a student may take during a nine-week summer session will be nine.

D. Graduation Requirements

The following graduation requirements apply to all degrees under this program:

- Completion of not less than thirty credits of approved graduate study.
- An overall grade point average (GPA) of 3.0 for all coursework taken at Allentown College related to the degree.
- Resolution of all incomplete grades.
- Completion of an approved project or thesis.
- Presentation of completed project and/or thesis at a public meeting or conference.

The statute of limitations for the completion of the degree requirements is seven years from the date of initial acceptance into the program.

APPENDIX A

PROGRAM DESCRIPTIONS
&
SYLLABI

NOTE: Syllabi are presented for all courses for which teachers have been identified.

.c.EDUCATION DEPARTMENT

.c.Core Requirements

a. Overview

The Education Department will provide the common core of courses for the graduate programs. Through the core courses, certain basic academic skills and perspectives are taught so as to insure that all students have a firm foundation upon which to draw when making decisions about curriculum and instruction. There is no degree in professional education. Degrees are only offered through the academic departments.

The core curriculum will emphasize reviews of current research findings and their implications for the schools.

The core requirement for any of the masters of education degree programs is nine credits including Introduction to Graduate Studies. It is highly recommended that the latter course be taken early in the graduate program.

b. Program Organization

Director of Graduate Education Programs Dr. Pat McIntyre

Faculty/Advisors [Vita are in Appendix B.]

Dr. Pat McIntyre
Dr. Robert McGilvray, OSFS

Program

Each of the five master of education programs -- Chemistry, Computers in Education, Computer Science, English, Mathematics, -- has a requirement of nine credits in Education. Of the nine credits, three specific courses are required and other is an electives. The student has a choice of either The School Curriculum or Psychology of Adult Learners as an elective.

Workshops, seminars, and internships will be offered by the Education Department and may be taken as general electives with the approval of the student's advisor, but they are not available as substitutes for the core courses. The maximum number of electives for a graduate student is six. With the approval of the student's advisor, the elective credits can be taken as workshops.

Courses

- Introduction to Graduate Studies*
- Advanced Educational Psychology*
- Philosophical and Sociological Aspects of Education*
- The School Curriculum
- Psychology of Adult Learners

Workshops

- Video Production Techniques
- Photography for the Teacher
- Presentation Software
- Data Base Searching

c. Course Descriptions

ED 501 Introduction to Graduate Studies* (3 Credits)

An introduction to the methods and products of educational research. The focus is on developing skills in locating and analyzing educational research through the use of systematic searching techniques and evaluative criteria. Prerequisite: admission to a graduate program in Education or permission of the instructor.

ED 502 Advanced Educational Psychology* (3 Credits)

A study of the models and theories of current educational practice with a view toward providing more effective instruction in the schools.

ED 504 Philosophical and Sociological Aspects of Education* (2 Credits)

A study of the rationales and social constructs which impact the social and moral precepts of our schools and the educational process.

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* Required Course.

ED 506 **The School Curriculum** (2 Credits)

A review of the major historical events and educational movements which have influenced the school curriculum. Students will study the effects of each of the major movements on the development of the curriculum in their individual fields of study.

ED 508 **Psychology of Adult Learners** (2 Credits)

A study of the research on the learning and training of adults which have implications for staff development activities in the school setting.

ED 560-9 **Workshops in Education** (1-3 Credits)

Specialized workshops dealing with the application of educational technology in the educational environment.

ED 570 **Readings in Education** (1-2 Credits)

An independent reading class for students with special needs. The reading list is to be developed by the student and instructor. Prerequisite: Graduate status. By arrangement with instructor.

ED 580 **Internship in Educatio** (1-2 Credits)

A directed instructional project in which the student receives credit for conducting workshops, assisting in the teaching of courses, and/or working in an instructional laboratory. Prerequisite: Graduate status.

ED 590 **Special Topics: Education** (1-3 Credits)

Course offered periodically on topics of special interest.

EDUCATION 501
EDUCATIONAL RESEARCH

Allentown College of St. Francis de Sales

SUMMER 1989

Overview: This course is designed to introduce students to the field of educational research. The course is designed to develop skills in information retrieval and analysis that are critical to a graduate program.

Objectives: The main objectives for the course are:

1. To learn to locate articles and studies related to an area of interest in a systematic and efficient manner.
2. To gain an understanding of the methods and procedures common to educational research with an emphasis on experimental design.
3. To improve your ability to read, analyze and evaluate research studies using established guidelines and criteria.

Instructor: Dr. Pat McIntyre

Schedule: 9:00 - 10:10

Telephone: 282-1100 Ext. 401 (Office)
868-7754 (Home)

Office Hours: Daily 2:00 or by appointment

Textbook: Educational Research, 3rd Edition, L. R. Gay, Merrill Publishing Company, Columbus, Ohio, 1987

Grading: Grading in the course will be based on series of assignments, tasks, and tests; each be given a maximum point value. Your grade will be determined by a normal curve. An "A" grade will require 93% of the total points available. A grade of "B" will require an 85% average; a grade of "C" will require 75%. There will be no extra credit assignments, but bonus points will be awarded for particularly well done assignments.

Tentative Class Schedule

SUMMER 1989

June	26	Classification of Research by Purpose
	27	Classification of Research by Method
	28	Educational Literature
	29	The Hypothesis Statement
July	3	CONFERENCES
	4	HOLIDAY
	5	The Literature Search I
	6	The Literature Search II
July	10	Unit Test I: Chapters 1,2, & 3
	11	CRITIQUE I: Discussion
	12	Populations and Samples I
	13	Populations and Samples II
July	17	Measuring Instruments I
	18	Measuring Instruments II
	19	CONFERENCES
	20	CONFERENCES
July	24	Unit Test II: Chapters 4 & 5
	25	The Historical Method
	26	The Descriptive Method
	27	The Correlational Method
July	31	Research Design I
Aug	1	Research Design II
	2	The Causal-Comparative Method
	3	The Experimental Method
Aug	7	Unit Test III: Chapters 6, 7, 8, 9, & 10
	8	Statistics: Descriptive
	9	Statistics: Parametric
	10	Statistics: Nonparametric
Aug	14	Data Analysis
	15	The Research Report I
	16	Unit Test IV: Chapters 11, 12, 13, 15, 16, & 17
	17	FINAL EXAMINATION

EDUCATION 501
, COURSE REQUIREMNENTS
SUMMER 1989

1. UNIT TESTS: During the semester there will be four unit tests as scheduled on the class calendar. The unit tests will cover the information presented in class, and the reading material from the class textbook. Each quiz will be worth 100 points. The unit tests will be short answer or multiple choice type items.

If you miss a scheduled quiz you will be expected to make it up at the time of the final examination (see below).

2. FINAL EXAMINATION: There will be a final examination as scheduled for the class. This examination will be optional. The format of the exam will be that there will be four separate tests; each test will be identical in format to the four unit tests. You may elect to take one or more of the unit tests and use the grade to replace the original quiz score. {Only higher scores will be used.}

It would be possible to accumulate up to 400 points on the final.

3. CRITIQUES: One of the most important skills to be developed in this course is the ability to read a research article, and to apply certain accepted criteria to determine its reliability and validity. This evaluation will be an on-going activity in the course, but on three occasions you will be expected to demonstrate your acquired skills by critiquing a research article.

The first critique will be done on an article provided by myself. You will read the article, and examine it for critical features. You will then submit a paper in which you will report on how well the article comes up to accepted standards. You will be applying the criteria that has been presented in class and in your textbook. It should be noted that a critique is not a summary or abstract of the article. You are to assume that the reader has read the article; you need only site portion for purposes of illustration.

As the semester goes on, you will be adding to the criteria that you will use to assess the articles. You should also note that you personal opinions and biases should not be reflected in the critique. At the same time, you are free to comment on the general value of the research from a common sense point of view. Many researchers make blatant errors and assumptions that any reasonable person might question; don't be intimidated by the fact that the material is in print.

The first critique is due on June 30. It will have a maximum point value of 20.

The second and third critiques will be of articles that you select from your own literature pool. The second is due on July 16 and the third on July 30. They will each have a maximum point value of 40.

When you submit the second and third critiques, you will need to include a copy of the article that is being critiqued. I will read the article before reading your critique.

4. BIBLIOGRAPHY: A major project in the course will be the preparation of a bibliography on a researchable topic of interest to you. The purpose of this topic is to make you familiar with the many tools and procedures that are needed to obtain systematic, up-to-date information on an education topic.

You will be expected to use both manual and on-line searching techniques to obtain the necessary information. The bibliography is to contain no less than twenty-five references, and it could be as long as fifty. You will be expected to locate current articles on the topic.

The bibliography will be submitted in standard format. It is highly recommended that you utilize a word processor to reduce the time of editing.

It will not be necessary for you to read all the articles in your bibliography. However, it is likely that you will select the articles to be critiqued from your list.

This activity will have a maximum of 100 points associated with it. The bibliography is due on August 3rd.

5. RESEARCH REVIEW: You will be required to prepare a critical review of an area of research -- an area rather than an individual article. The area that you select will be the same as the one that you have prepared a bibliography for, and the same that is used for your critiques. This will be a major term project.

From your bibliography you will select a minimum of ten research articles; they can be experimental research, but that is not necessary. Using these articles you will prepare an information retrieval matrix which will contain the most significant elements and/or attributes of the studies. This process will be described in class.

Once the matrix is completed, you will prepare an analysis of the matrix which will reflect the general level and validity of the research that has been done in this area. The analysis will typically be a paper of between four and ten pages in length. Sample papers will be available in the library for modeling.

A maximum of 200 points will be available for this activity. The paper is due on August 6th.

6. RESEARCH PAPER: As part of the course, you will be expected to complete a research proposal. The paper will be developed in steps, and after each step, I will meet with each student and discuss their proposal (See class schedule.). This would be similar to what would be done if a project was actually being developed. For clarity and organization, each of the parts will be presented as a separate item. They will each be graded as separate items, and a final grade will be given for the project as well.

A. Hypothesis - You are to prepare a simple statement concerning a question that you would like to study during the course. The statement will be phrased as a research hypothesis.

The research hypothesis should be followed by another statement which addresses the same question but expressed in the null form. This statement should be followed by operational definitions of the key variables and any clarification that might be necessary for distinguishing the sample and population.

This part of the activity is due on June 25th, and it will be the basis for the individual conference to be held the following week. {See schedule}. Fifteen points will be available for this activity.

B. Sampling Plan - The second step in the proposal is to design a plan for selection of the subjects. This plan needs to be devised in the context of your own teaching situation, or a situation that is similar. You are not to fantasy about some ideal set of circumstances.

A conference will not be scheduled following this activity, but you may elect to meet with me about your plan. Fifteen points will be available for this activity. It will be due on July 7th.

C. Criterion Variable - The third segment of the proposal will be an explanation of the instrument that was chosen to measure the criterion variable. There are two possibilities here: (1) you may select a standard evaluation instrument or (2) you may develop a plan for developing your own measuring instrument.

In the case of the standard evaluation instrument, you will be required to provide information, usually obtained through the use of Buros' Measurement Yearbooks, on three tests, and then give your reasons for the selection of one.

If you are planning to develop your own evaluation instrument, you will need to show how you will determine the validity and the reliability of the instrument.

This paper is due on July 16th. Thirty points is available for this activity.

D. Research Design - You are to select a research design for your experiment, and to explain how you plan to control for significant variables in the doing of the project. You should keep in mind the various sources of invalidity discussed in class, and you should be sensitive to the common sense of the situation. A rule of thumb is what would you accept as sufficient evidence that you really had determined the relationship between the variables, and not some other factors should you get a statistical difference.

This paper is due on July 28th in preparation for the conference the following week. Thirty points is available for this activity.

E. RESEARCH PROPOSAL - The final segment of this activity is an overall paper which includes all the pieces developed above. The final paper will include the four items described plus a title, and a discussion of possible implications should the null hypothesis be rejected.

This portion of the activity should be more a "cut and paste" activity than a new paper, but you will have the opportunity for significant input along the way, and the final paper should reflect this. It is not unusual for the actual hypothesis to change during the development of the other elements of the paper.

This project is due on August 6th, and will be worth up to 100 points.

EDUCATION 502
ADVANCED EDUCATIONAL PSYCHOLOGY

Allentown College of St. Francis de Sales

SUMMER 1990

Overview: This course is designed to examine the underlying models and theories of current educational practice with a view towards providing more effective instruction in the schools. Important theories and research in educational psychology is studied with a major focus on how teachers can apply this knowledge in the classroom. Teachers are asked to indicate how they can use theories, concepts, and research from educational psychology in actual classroom situations by designing modifications of their teaching methodology to be responsive to the individual needs of their learners and by designing evaluation techniques to determine if the modifications have been effective.

Objectives: The main objectives for the course are:

1. To study behavioral, cognitive and humanistic theories of learning in order to devise classroom strategies that can improve student learning.

2. To predict the influence of individual student differences upon learning and student motivation from a study of professional literature on handicapped and gifted students.

3. To devise specific instructional interventions for the teacher's own classroom based on the study of theory and the analysis of literature.

4. To devise measurement and evaluation techniques to analyze the effectiveness of the planned interventions.

Instructor: Dr. A. Robert McGilvray OSFS

Schedule: 9:00 - 10:10

Telephone: 282-1100 Ext. 378 (Office)

Office Hours: Daily 2:00 or by appointment

Textbook: Applying Educational Psychology in the Classroom, Myron H. Dembo, Longman Inc., Reading, MA (1988)

Adaptive Mainstreaming: A Primer for Teachers and Principals (3rd ed.), Maynard C. Reynolds and Jack W. Birch, Longman Inc., Reading, MA (1988)

Experimental and Quasi-Experimental Design, Donald T. Cambell and Julian C. Stanley, Rand McNally, (Latest Edition)

Grading: Grading in the course will be based on a series of assignments, tasks, and tests; each will be given a maximum point value. A major portion of the grade will be determined by the classroom intervention devised by the individual teacher and the evaluation structure which will analyze its effectiveness.

Activities:

Assignments	20%
Reports	10%
Unit Tests (3)	20%
Intervention Strategy	50%

Tentative Class Schedule

SUMMER 1990

June	26	Educational Psychology Applied to the Classroom
	27	Behavioral Psychology I
	28	Behavioral Psychology II
	29	Cognitive Psychology I
July	3	Cognitive Psychology II
	4	HOLIDAY
	5	Humanistic Psychology I
	6	Humanistic Psychology II
July	10	Christian Humanistic Psychology in the Salesian Tradition
	11	Unit Test #1
	12	Accessing Literature on Educational Psychology
	13	Attempts at Applying Literature to Classroom Situations
July	17	Development and Individual Differences
	18	Mainstreaming Handicapped - Theory
	19	Mainstreaming Handicapped - Practice
	20	Trends and Directions
July	24	Gifted Education - Overview
	25	Physical and Psycho-social Aspects of Giftedness
	26	Perspective on Creativity
	27	Assessment Instruments used in Gifted Education
July	31	Special Needs of the Talented Minority Students
Aug	1	Unit Test #2
	2	Preparing for Effective Implementation of Theory
	3	Lesson Presentation
Aug	7	Classroom Management
	8	Measurement and Evaluation
	9	Conferences
	10	Conferences
Aug	14	Individual Reports
	15	Individual Reports
	16	Individual Reports
	17	Unit Test #3

EDUCATION 504
PHILOSPHICAL AND SOCIOLOGICAL ASPECTS OF EDUCATION

Allentown College of St. Francis de Sales

SUMMER 1991

Course Description: A study of the rationales and social constructs which impact the social and moral precepts of our schools and the educational process.

Note: The course will not be taught until the summer of 1991. A current faculty member in the Department of Philosophy has expressed an interest in teaching this course, but he will require time to develop the syllabus.

EDUCATION 506
THE SCHOOL CURRICULUM
ALLENTOWN COLLEGE of SAINT FRANCIS de SALES

SUMMER 1992

Overview: This course is designed to introduce the study of curriculum with an emphasis its historical, psychological, and sociological foundations. In addition to the theoretical dimensions of the topic, students will be required to demonstrate clear understanding of the origins and issues in curriculum germane to their own area of expertise, and to explore the potential of technology in the design of curricula in the future.

Objectives: The main objectives for the course are:

1. To learn about the historical and sociological factors that have influenced the high school curriculum.

2. To gain an understanding of the methods and models that have been used in the design of curriculum.

3. To read, analyze and evaluate research studies related to curriculum development and curriculum design.

Instructor: Dr. Pat McIntyre or new hire

Schedule:

Telephone:

Office hours: Daily 2:00 or by appointment

Textbook: Curriculum: Foundations, Principles, and Issues, Allan C. Ornstein and Francis P. Hunkins, Prentice Hall, 1988

The Struggle for the American Curriculum, Herbert M. Kliebard, Routledge and Kegan Paul, Boston, 1986

Salient Dates in American Education 1635-1964, Edward A. Krug, Harper & Row, New York, 1966

The Saber-Tooth Curriculum, J. Abner Peddiwell, McGraw-Hill Book Company, New York, 1939

Grading: Grading in the course will be based on series of assignments, tasks, and tests; each be given a maximum point value. Your grade will be determined by a normal curve. An "A" grade will require 93% of the total points available. A grade of "B" will require an 85% average; a grade of "C" will require 75%.

Activities: The following activities will be used to assess understanding and determine grades for this course.

Unit Test	3 @ 100	300
Book Review	1 @ 100	100
Group Presentation	1 @ 100	100
Research Critiques	2 @ 100	200
Term Paper	1 @ 200	200

Tentative Class Schedule
SUMMER 1989

June	15	The Field of Curriculum
	16	Accessing Literature on Curriculum
	17	Philosophical Foundations of Curriculum I
	18	Philosophical Foundations of Curriculum II
June	22	Philosophical Foundations of Curriculum III
	23	Historical Foundations of Curriculum I
	24	Historical Foundations of Curriculum II
	25	Historical Foundations of Curriculum III
June	29	Unit Test I: Chapters 1,2, & 3
	30	Psychological Foundations of Curriculum I
July	1	Psychological Foundations of Curriculum II
	2	Psychological Foundations of Curriculum III
July	6	Social Foundations of Curriculum I
	7	Social Foundations of Curriculum II
	8	Social Foundations of Curriculum III
	9	Unit Test II: Chapters 4 & 5
July	13	Aims, Goals, and Objectives
	14	Curriculum Design
	15	Curriculum Development
	16	Curriculum Implementation
July	20	Curriculum Evaluation
	21	Unit Test III: Chapters 6, 7, 8, 9, & 10
	22	Curriculum Theory
	23	Curriculum Issues and Trends
July	27	Future Directions
	28	Individual/Group Reports
	29	Individual/Group Reports
	30	Individual/Group Reports
Aug	3	Individual/Group Reports
	4	Individual/Group Reports
	5	Individual/Group Reports
	6	Individual/Group Reports

EDUCATION 508
PSYCHOLOGY OF THE ADULT LEARNER

Allentown College of St. Francis de Sales

SUMMER 1991

Course Description: A study of the research on the learning and training of adults which have implications for staff development activities in the school setting.

Note: The course will not be taught until the summer of 1991. A faculty member has not been identified to teach the course. If necessary, we will recruit an adjunct professor to develop and teach the course.

Chemistry Program

a. Overview

The program will be designed to improve the academic preparation of high school Chemistry teachers by improving their knowledge in the traditional areas of the curriculum. A graduate of this program should be able to offer leadership in the development of a high school Chemistry curriculum and should be able to teach an advanced placement Chemistry course.

b. Program Organization

Coordinator Dr. Rodger Berg

Faculty/Advisors [Vita are in Appendix B.]

Dr. Rodger Berg
Dr. Frank Gadek
Dr. Harry Warren
Mr. Roy Arlotto

Program

This program has six courses. One course is required (See below.) and three out of five of the others are required. Every student must complete a three credit project. In addition there is a nine credit core requirement in professional education. The project can be taken as three one-credit courses.

A student has six elective credits. With the approval of the student's advisor, the elective credits can be taken as workshops.

Total number of credits needed for graduation is thirty.

Courses

- CH 510 General Chemistry for Teachers*
- CH 515 Analytical Chemistry for Teachers
- CH 520 Organic Chemistry for Teachers
- CH 525 Physical Chemistry for Teachers

* Required Course.

- CH 530 Biochemistry for Teachers
- CH 600 Project in Chemical Education*

Workshops

- Chemistry Software
- Chemistry for Elementary School Teachers
- Lecture Demonstrations for Chemistry Teachers
- Safety in the Chemistry Laboratory
- Computer Instrumentation Application

c. Course Descriptions

CH 510 General Chemistry for Teachers* (3 Credits)

An in depth study of selected topics in General Chemistry, in particular those topics directly related to the high school curriculum with special emphasis on the use of laboratory exercises and lecture demonstrations as strategies for instruction.

CH 515 Analytical Chemistry for Teachers (3 Credits)

An in depth study of selected topics in Analytical Chemistry, in particular those topics directly related to the high school curriculum with special emphasis on the use of laboratory exercises and lecture demonstrations involving appropriate chemical instrumentation as strategies for instruction.

CH 520 Organic Chemistry for Teachers (3 Credits)

An in depth study of selected topics in Organic Chemistry, in particular those topics directly related to the high school curriculum with special emphasis on the use of laboratory exercises and lecture demonstrations as strategies for instruction.

CH 525 Physical Chemistry for Teachers (3 Credits)

An in depth study of selected topics in Physical Chemistry, in particular those topics directly related to the high school curriculum with special emphasis on the use of laboratory exercises and lecture demonstrations as strategies for instruction.

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* Required Course.

CH 530 Biochemistry Chemistry for Teachers (3 Credits)

An in depth study of selected topics in Biochemistry Chemistry, in particular those topics directly related to the high school curriculum with special emphasis on the use of laboratory exercises and lecture demonstrations as strategies for instruction.

CH 560-9 Workshops in Chemical Education (1-3 Credits)

Specialized workshops dealing with the teaching of Chemistry in the pre-college environment. Typical workshops will include demonstration and laboratory exercises appropriate for the grade level taught by the participating teachers.

CH 570 Readings in Chemical Education (1-2 Credits)

An independent reading program for students with special interests and needs. The reading list will be developed by both the student and the instructor. Prerequisite: Graduate status. By arrangement with instructor.

CH 580 Internship in Chemistry (1-2 Credits)

A directed instructional project in which the student receives credit for conducting workshops, assisting in the teaching of courses, and/or working in an instructional laboratory. Prerequisite: Graduate status

CH 590 Special Topics: Chemical Education (1-3 Credits)

Course offered periodically on topics of special interest.

CH 600 Project: Chemical Education * (1-3 Credits)

The terminal course in the Master of Education in Chemistry Program. A total of three credits required for the Master of Education Degree in Chemistry. These credits may be taken one at a time. Prerequisite: Approval of advisor.

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* Required Course.

CHEMISTRY 510
GENERAL CHEMISTRY FOR TEACHERS

Allentown College of St. Francis de Sales

SUMMER 1989

Course Description: This course is an in depth study of selected topics in General Chemistry, in particular those topics directly related to the high school curriculum with special emphasis on the use of laboratory exercises and lecture demonstrations as strategies for instruction.

Overview: The course will focus on those aspects of General Chemistry which are often difficult for the high school student to understand and are sometimes not covered in depth in an introductory course. An extensive, practical laboratory exercise will be performed for each topic studied. Students will be required to develop and present a laboratory project in their own area of interest.

Objectives: The main objectives for the course are:

1. To gain an understanding of those Chemistry topics often presented in introductory courses at a level necessary for teaching an advanced placement course.

2. To provide some experience with laboratory exercises and lecture demonstrations that might be used to teach certain subjects in depth.

Instructor: Dr. Rodger Berg

Schedule: 1:00 - 4:00 Monday-Friday

Telephone: 215-282-1100, Ext. 220

Office hours: 11:00 Monday-Friday

Textbook: General Chemistry: Principles and Modern Applications, R. H. Petrucci, Macmillan Publishing Company, New York, (1989)

Bibliography:

Chemistry, S. S. Zumdahl, D.C. Heath and Company, Lexington, MA (1989)

General Chemistry, H. F. Holtzclaw, Jr., W. A. Robinson, and W. H. Nebergall, D. C. Heath and Company, Lexington, MA (1988)

General Chemistry with Qualitative Analysis, K. W. Whitten, K. D. Gailey, and R. E. Davis, Saunders College Publishing, Philadelphia, PA (1988)

Chemistry, J. C. Bailar, Jr., T. Moeller, J. Kleinberg, C.O. Guss, M. E. Castellion, and C. Metz, Hartcourt Brace Jovanovich and Academic Press, Inc., New York (1989)

Laboratory Manual for Chemistry, L. Epstein, Wadsworth Publishing Company, Belmont, CA (1986)

Experimental Chemistry, J. F. Hall, D. C. Heath and Company, Lexington, MA (1989)

Course Outline:*

I. Thermochemistry and Thermodynamics
   - A. Heat and Heat Capacity
   - B. Internal Energy, Heat, and Work
   - C. First Law of Thermodynamics
   - D. Enthalpy and Enthalpy Changes
   - E. State Functions
   - F. Chemical Reactions and Spontaneity
   - G. Second Law of Thermodynamics
   - H. Entropy and Entropy Changes
   - I. Free Energy and Free Energy Changes
   - J. Chemical Equilibria and Free Energy Changes
   - K. Third Law of Thermodynamics

II. Chemical Bonding and Molecular Structure
   - A. Ionic Bonds
   - B. Covalent Bonds
   - C. Lewis Electron-Dot Structures
   - D. Bond and Molecular Polarities
   - E. Valence-Shell Electron-Pair Repulsion Theory
   - F. Hybridization of Atomic Orbitals
   - G. Molecular Orbital Theory
   - H. Summary of Molecular Structure and Geometry

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* The actual number of topics and the depth of study of each topic will depend to some extent on the general background and interests of the students.

III. Chemical Kinetics
- A. Reaction Rates and Influencing Factors
- B. Rate Laws and Orders of Chemical Reactions
- C. Rate Theories
- D. Activation Energy and the Arrhenius Equation
- E. Reaction Mechanisms

IV. Chemical Equilibrium
- A. Law of Mass Action and Equilibrium Constants
- B. Effects on Equilibria
- C. Gas Phase, K_c's and K_p's
- D. Weak Acids and K_a's
- E. Weak Bases and K_b's
- F. Buffer Solutions
- G. Slightly Soluble Electrolytes and K_{sp}'s
- H. Equilibrium Calculations Involving Weak Electrolytes

V. Descriptive Chemistry (Sources, Properties, and Uses)
- A. Metals - Alkali, Alkaline-Earth, Aluminum, and Gallium
- B. Nonmetals - Hydrogen, Carbon, Nitrogen, Phosphorous, Arsenic, Oxygen, Sulfur, Selenium, and Halogens
- C. Noble Gases
- D. Semimetals - Boron and Silicon
- E. Transition Metals - Scandium, Titanium, Chromium, Manganese, Iron, Cobalt, Nickel, Palladium, Platinum, Copper, Silver, Gold, Zinc, Cadmium, and Mercury

VI. Coordination Compounds
- A. Terms
- B. Nomenclature
- C. Structures of Complexes
- D. Bonding Theories

Laboratory Exercises:

1. Heat of Formation of Magnesium Oxide
2. Chemical Kinetics of the Iodination of Acetone
3. Formation Constant of $FeSCN^{2+}$
4. Ionization Constant of Picric Acid
5. Solubility Product Constant of Copper (II) Iodate
6. Preparation of a Coordination Complex [e.g. Trans-bis(ethylene diamine)dinitro cobalt (II)]
7. Various Qualitative Analysis Schemes

CHEMISTRY 515
ANALYTICAL CHEMISTRY FOR TEACHERS

Allentown College of St. Francis de Sales

SUMMER 1991

Course Description: This course is an in depth study of selected topics in Analytical Chemistry, in particular those topics directly related to the high school curriculum with special emphasis on the use of laboratory exercises and lecture demonstrations involving appropriate chemical instrumentation as strategies for instruction.

Overview: The course will focus on small instruments that might be available in the high school laboratory. Consideration will be given to basic principles, designs, operations, and applications that would be of interest or of practical significance. An extensive, practical laboratory exercise will be performed for each topic studied. Students will be required to develop and present a laboratory project in their own area of interest.

Objectives: The main objectives for the course are:

1. To gain an understanding of those topics in Analytical Chemistry often presented in introductory courses at a level necessary for teaching an advanced placement course.

2. To provide some experience with laboratory exercises and lecture demonstrations that might be used to teach certain subjects in depth.

Instructor: Dr. Rodger Berg

Schedule: 1:00 - 4:00 Monday-Friday

Telephone: 215-282-1100, Ext. 220

Office hours: 11:00 Monday-Friday

Textbook: Principles of Instrumental Analysis, D. A. Skoog, Saunders College Publishing, Philadelphia, PA (1985)

Instrumental Methods of Analysis, H. H. Willard, L. L. Merritt, Jr.; J. A. Dean, F. A. Settle, Jr., Wadsworth Publishing Company, Belmont, CA (1988)

Course Outline:*

I. Electroanalytical Chemistry
   - A. Oxidation and Reduction
   - B. Electrochemical Cells and Electrode and Cell Potentials
   - C. Standard and Nonstandard Conditions (Nernst Equation)
   - D. Voltaic Cells and Electrolytic Cells
   - E. Electrodepositions
   - F. Conductimetry and Titrations
   - G. Coulometry and Titrations
   - H. Potentiometry and Titrations (Ion Selective Electrodes)
   - I. Amperometry and Titrations
   - J. Polarography

II. Optical Spectroscopy
   - A. Ultraviolet-Visible Absorption Spectrometry
   - B. Infrared Absorption Spectrometry
   - C. Atomic Absorption Spectroscopy and Flame Emission Spectroscopy
   - D. Fluorescence and Phosphorescence
   - E. Turbidimetry and Nephelometry
   - F. Polarimetry
   - G. Refractometry
   - H. Other Optical Methods

III. Chemical Separation - Chromatography
   - A. Basic Column Chromatography
   - B. Paper Chromatography
   - C. Ion-Exchange Chromatography
   - D. Thin Layer Chromatography
   - E. Gas-Liquid Chromatography
   - F. Liquid-Liquid Chromatography

IV. Computer Instrumentation Applications in Chemistry

Laboratory Exercises:

1. Electrolytic Determination of Copper
2. Conductimetric Determination of Chlorine
3. Coulometric Determination of Cyclohexane
4. Potentiometric Determination of an Amino Acid

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* The actual number of topics and the depth of study of each topic will depend to some extent on the general background and interests of the students.

5. Determination of Fluoride Using a Fluoride Ion-Selective Electrode
6. Spectrophotometric Determination of Iron
7. Infrared Analysis of a Mixture of Hydrocarbons
8. Determination of Calcium via AAS
9. Fluorometric Determination of Quinine
10. Column Chromotography: Separation of Cis and Trans Azobenzene
11. Gas Chromotography: Analysis of a Mixture of Hydrocarbons

CHEMISTRY 520
ORGANIC CHEMISTRY FOR TEACHERS*

Allentown College of St. Francis de Sales

SUMMER 1991

Course Description: This course is an in depth study of selected topics in Organic Chemistry, in particular those topics directly related to the high school curriculum with special emphasis on the use of laboratory exercises and lecture demonstrations as strategies for instruction.

Overview: The course will focus on practical aspects of Organic Chemistry, e.g., consumer issues, polymers, food, industrial applications and topics of local interest. Laboratory exercises will be used to illustrate the lecture topics. The exercises will be selected with a view towards their being used in the high school setting.

VCR tapes, slides, transparencies, etc., will be used as appropriate with special attention being given to the "Chemistry in the Community" [CHEMCOM] curriculum materials.

Objectives: The main objectives for the course are:

1. To gain an understanding of those topics in Organic Chemistry which are most closely related to daily lives, and the managing of science and technology in our culture.

2. To provide some experience with laboratory exercises and lecture demonstrations that might be used to teach certain subjects in depth.

Instructor: Dr. Frank Gadek

Schedule: 1:00 - 4:00 Monday-Friday

Telephone: 215-282-1100, Ext. 273

Office hours: 11:00 Monday-Friday
Dooling Hall, Room 233

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* © February 8, 1989 - Frank J. Gadek

Textbook:

Organic Chemistry, R. T. Morrison and R. N. Boyd, Allyn and Bacon, Inc., Boston, MA (1987)

Bibliography:

Chemistry for Changing Times, John W. Hill, Burgess Publications, Company, Minneapolis, MN (1988)

The Merck Index of Chemicals and Drugs, Paul G. Stecher (ed.), Merck & Company, Rahway, NJ.

Organic Experiments (Micro/macroscale Ed.), L. F. Fieser and K. L. Williamson, D. C. Heath and Company, Lexington, MA (1987)

Textbook of Organic Chemistry, C. R. Noller, W. B. Saunders Company, Philadelphia, PA (1966).

Applied Chemistry, W. R. Stine, Allyn and Bacon, Inc., Boston, MA (1981)

Chemical Investigations for Changing Times, L. W. Scott, J. W. Hill, and P. Muto, Macmillan Publishing Company, New York, (1984)

The World of Carbon, I. Asimov, Collier Books, New York, (1962)

The World of Nitrogen, I. Asimov, Collier Books, New York, (1962)

Organic Chemistry of Biological Compounds, R. Barker, Prentice-Hall, Inc., Englewood Cliffs, New Jersey, (1971)

Fundamentals of General, Organic, and Biological Chemistry, J. R. Holum, John Wiley & Sons, New York, (1982)

Organic Chemistry, T. W. Graham Solomons, John Wiley & Sons, New York, (1980)

Advanced Organic Chemistry: Reactions, Mechanisms, and Structures, J. March, McGraw-Hill Book Company, New York, (1977)

The Systematic Identification of Organic Compounds, R. L. Shriner, R. C. Fuson, and D. Y. Curtin, John Wiley and Sons, New York, (1964)

Biochemistry, A. L. Lehninger, Worth Publisher, Inc., New York, (1975)

Course Outline:*

I. Relationship of Organic and Inorganic Chemistry

II. Hydrocarbons
- A. Alkanes
- B. Alkenes
- C. Alkynes
- D. Cyclic

III. Stereochemistry
- A. Conformation/Configuration
- B. Optical Activity/Chiral Center
- C. Enantiomers
- D. Racemic Modification
- E. Meso Compounds
- F. Diastereomers
- G. Cis/Trans/Syn/Anti
- H. Stereospecific/Steroselective
- I. R. S. Cahn
- J. E/Z

IV. Aromaticity
- A. Benzenoid
- B. Nonbenzenoid
- C. Polynuclear
- D. Heterocyclic
- E. Resonance/Conjugation/Stability
- F. Huckel's Rule

V. Functional Groups
- A. Alkyl Halides
- B. Aryl Halides
- C. Alcohols
- D. Ethers/Epoxides
- E. Aldehydes/Ketones
- F. Carboxylic Acids/Derivatives
- G. Amines
- H. Phenols

VI. Biomolecules
- A. Fats
- B. Carbohydrates
- C. Amino Acids/Proteins
- D. RNA/DNA

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* Specific topics will be determined after a diagnostic test and essay assignment.

VII. Polymers

VIII. Special Topics
- A. Drugs
- B. Alcoholic Beverages
- C. Chemical Safety
- D. Insect Control
- E. Agriculture
- F. Steroids
- G. Pollution
- H. Food Additives
- I. Household Products

Laboratory Exercises:

1. Polymers - "Friendly Plastic, Nylon, etc.
2. Biosynthesis/Gasohol - Fermentation/Distillation
3. Aspirin/Oil of Wintergreen
4. Ferrocene (microscale)
5. Dyes and Dyeing Using Test Fabrics
6. Steam Distillation of a Natural Product
7. Isolation of Cholesterol from Gallstones (microscale)
8. Isolation of Caffeine from tea (microscale)
9. Food Analysis - Soda, Vinegar, etc.

Activities:

1. Chemical Literature Searching
2. Term Paper on Consumer Topic in Organic Chemistry
3. Local Field Trips

CHEMISTRY 525
PHYSICAL CHEMISTRY FOR TEACHERS

Allentown College of St. Francis de Sales

SUMMER 1991

Course Description: This course is an in depth study of selected topics in Physical Chemistry, in particular those topics directly related to the high school curriculum with special emphasis on the use of laboratory exercises and lecture demonstrations as strategies for instruction.

Overview: The course will focus on those aspects of Physical Chemistry which are often difficult for the high school student to understand and are sometimes not covered in depth in an introductory course. An extensive, practical laboratory exercise will be performed for each topic studied.

Objectives: The main objectives for the course are:

1. To provide an in depth study of selected topics of significance to the high school teacher.

2. To provide some experience with laboratory exercises and lecture demonstrations that might be used to teach certain subjects at the high school level.

Instructor: Dr. Harry O. Warren

Schedule: 1:00 - 4:00 Monday-Friday

Telephone: 215-282-1100, Ext. 263

Office hours: 11:00 Monday-Friday
Dooling Hall, Room 225

Textbook: Physical Chemistry, (5th Ed.), G. M. Barrow, McGraw-Hill Book Company, New York, (19888)

Bibliography: Physical Chemistry (3rd ed.), G. W. Castellan, Addison-Wesley, Company, (1983)

Physical Chemistry in Biological Sciences, I. Tinoco, Jr., K. Sauer, and J. C. Wang, Prentice-Hall Book Company, 1985

Standard Potentials in Aqueous Solutions, A. J. Bard, R. Parsons, and J. Jordan, Dekker (1985)

Software Library of Physical Chemistry (Computer Software), P. B. Ayscough, Freeman, Company, (1988)

Course Outline:

I. States of Matter: Structure and Energy
   A. Gases
   B. Liquids
   C. Solids

II. Thermodynamics in Chemistry
   A. Principles
      a. Energy and the First Law
      b. Entropy and the Second & Third Laws
   B. Applications
      a. Chemical Equilibrium
      b. Phase Equilibria
      c. Solutions
      d. Electrochemical Cells

III. Chemical Dynamics
   A. Kinetics
   B. Transport Processes

Laboratory Exercises:

1. Thermometry - Correlation of a Thermistor with a Mercury Thermometer
2. Bas Behavior - Diffusion Rates of Ammonia and Hydrogen Chloride through Dry Nitrogen Gas
3. Calorimetry - Heat of Solution of a Salt in Water
4. Calorimetry - Enthalpy of Neutralization in Aqueous Solution
5. Chemical Equilibrium - The Acid Dissociation Constant of Methyl Red
6. Transportation Processes - Isoionic pH of Gelatin by Viscosity Measurements
7. Transportation Processes - Viscosity of Liquids and Solutions
8. Phase Equilibria - Phase Diagram for a Two-Component System
9. Kinetics - Iodination of Acetone
10. Kinetics - Inversion of Sucrose: Polarimetry

CHEMISTRY 530
BIOCHEMISTRY FOR TEACHERS

Allentown College of St. Francis de Sales

SUMMER 1992

Course Description: This course is an in depth study of selected topics in Biochemistry, in particular those topics directly related to the high school curriculum with special emphasis on the use of laboratory exercises and lecture demonstrations as strategies for instruction.

Note: This course will be developed by the person who will be joining the Science Department at Allentown College in the Fall of 1989. The course will not be taught until the summer of 1992. This should provide ample time for planning. It is expected that most of the participants in the program will not have had a previous course in Biochemistry. The course is likely to have Chemistry 520 [Organic Chemistry for Teachers] as a prerequisite.

Computers in Education Program

a. Overview

This program is designed for the pre-college teacher who is interested in the application of microcomputer technology to the school setting. Although the candidate for the degree might be a computer science teacher, it is more likely that he/she will be someone interested in the application of the computer to some area other than computer science or an individual who will serve as a computer coordinator at the school or district level.

A graduate with this type of preparation might seek work as a trainer of teachers or other professionals interested in application software.

b. Program Organization

Program Coordinator Dr. Pat McIntyre

Faculty/Advisors [Vita are in Appendix B.]

Dr. Pat McIntyre

Program

This program has seven courses, of which four are required. (See below.) The required courses will be offered on a three-year cycle. In addition there is a nine credit core requirement in professional education. Every students must complete a three credit project. The project can be taken as three one-credit courses. The program includes options for workshops, independent study, internships and special topic seminars.

A student has six elective credits. With the approval of the student's advisor, the elective credits can be taken as workshops.

Total number of credits needed for graduation is thirty.

Courses

- CE 510 LOGO
- CE 515 Advanced BASIC for Educators*
- CE 520 Authoring Languages and Systems*

* Required Course.

- CE 525 Software Collections*
- CE 530 The Computer Curriculum and Other Issues*
- CE 535 Microcomputer Systems
- CE 550 Teaching Computer Science
- CE 600 Project: Computer Education*

Workshops

- The Computer Primer
- Introduction to BASIC Programming
- Introduction to PILOT
- Computer Literacy for Teachers
- Introduction to the Use of Computers by Children with Physical Disabilities
- Introduction to LOGO
- Material Production Software

Recommended Electives

CS 515	Problem Solving with Pascal
CS 520	Advanced Programming Concepts
CS 525	Computer Concepts

c. Course Descriptions

CE 510 LOGO (3 Credits)

An introductory course in the LOGO language. The topics to be covered are the syntax, logistics, resources, philosophical and research support for the language.

CE 515 Advanced Programming for Educators* (3 Credits)

BASIC Programming including arrays, subroutines, sorts, files, string variables, graphics and advanced programming techniques with special focus on structured programming. Prerequisite: A working knowledge of BASIC.

CE 520 Authoring Languages and Systems* (3 Credits)

An introduction to the PILOT authoring language and comparisons with other CAI languages and/or systems. Prerequisite: Prior programming experience or permission of instructor.

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* Required Course.

CE 525 **Software Collections*** (3 Credits)

An analysis of software evaluation, development and management of software collections, and software maintenance.

CE 530 **The Computer Curriculum and Other Issues*** (3 Credits)

A review and analysis of the use and role of computers in society and the implications for teachers and students. Software, media, curriculum guides, and instructional techniques.

CE 535 **Microcomputers Systems** (3 Credits)

An analysis of the major functions and features of a variety of microcomputer and related peripherals. Disk operating systems, telecommunications, networking, maintenance. Prerequisites: Knowledge of at least one programming language.

CE 550 **Teaching Computer Science** (3 Credits)

A study of the research and authoritative opinion on the goals, objectives and methods of teaching computer science with special interest in concepts of structured programming and software engineering and maintenance.

CE 560-9 **Workshops in Computers in Education** (1-3 Credits)

Specialized workshops dealing with the application of educational technology in the educational environment.

CE 570 **Readings in Computers in Education** (1-2 Credits)

An independent reading program for students with special needs. The reading list is to be developed by the student and instructor. Prerequisite: Graduate status. By arrangement with instructor

CE 580 **Internship in Computers in Education** (1-2 Credits)

A directed instructional project in which the student receives credit for conducting workshops, assisting in the teaching of courses, and/or working in an instructional laboratory. Prerequisite: Graduate status.

CE 590 **Special Topics: Computers in Education** (1-3 Credits)

Course offered periodically on topics of special interest.

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* Required Course.

CE 600 **Project: Computers in Education*** (1-3 Credits)

The terminal course in the Computers in Education Program. Required for the Master of Education degree. A total of three credits are required. These credits may be taken one at a time. Prerequisite: Approval of advisor.

COMPUTERS IN EDUCATION 510
LOGO

Allentown College of St. Francis de Sales

SUMMER 1991

Course Description: An introductory course in the LOGO language. The topics to be covered are the syntax, logistics, resources, philosophical and research support for the language.This course is an in depth study of selected topics

Note: This course will be developed by the person who will be joining the Mathematics/Computer Science Department at Allentown College in the Fall of 1989. The course will not be taught until the summer of 1991. This should provide time for planning.

COMPUTERS IN EDUCATION 510
ADVANCED BASIC PROGRAMMING

Allentown College of St. Francis de Sales

SUMMER 1990

Overview: The purpose of this course is to develop an understanding of the basic structure and syntax of a computing language. Using the popular BASIC language, the students will be introduced to structured programming, iteration, data structures, string manipulations, and graphics.

Instructor: Dr. Pat McIntyre

Schedule: Monday, Wednesday 1:00-3:00

Telephone: 282-1100, Ext. 401 (Office)
868-7754

Office hours: Daily 3:00 or by appointment

Textbook: Apple User's Guide (2nd Edition), Lon Poole, Osbourne/McGraw-Hill, Berkeley, CA, 1983

Grading: Grading in the course will be based on weekly quizzes (25%), programming assignments (25%), midterm examination (25%), and final examination (25%).

Tentative Class Schedule:

JUNE	18	A.	REVIEW
		B.	STRUCTURED PROGRAMMING & DOCUMENTATION
	20	A.	READ/DATA
		B.	ARRAYS
	25	A.	GRAPHICS: LORES
		B.	GRAPHICS: HIRES
	27	A.	DOS
JULY	2	A.	STRING MANIPULATION
	4		----- HOLIDAY -----
	9		MIDTERM EXAMINATION
	11	A.	SEQUENTIAL FILES I
	16	A.	SEQUENTIAL FILES II
	18	A.	RANDOM ACCESS FILES I
	23	A.	RANDOM ACCESS FILES II
	25	A.	SORTS
	30	A.	PEEKS & POKES
AUG	1	A.	MACHINE LANGUAGE I
	6	A.	MACHINE LANGUAGE II
	8		FINAL EXAMINATION

Assignments: Each week there will be an assigned programming problem. It will be due, at class time on Tuesday. You will copy your assignment on the class disk provided in the Center, and you are to submit a printout of the program. The total points available will be noted on each assignment.

COMPUTER EDUCATION 511
COMPUTER AUTHORING LANGUAGES AND SYSTEMS

Allentown College of St. Francis de Sales

Summer 1990

Overview: This course is designed to provide an overview of computer assisted instruction through the introduction of an authoring language called HyperCard. The course will include both the syntax of the language and some general concepts of instructional design applicable to computer assisted instruction.

Instructor: Dr. Pat McIntyre

Schedule: Monday - Thursday 1:00 - 3:00

Office Hours: Daily 10:00 and by appointment

Telephone: 282 - 1100 (Office)
868 - 7754 (Home)

Text: The Complete HyperCard Handbook (2nd ed.), Danny Goodman, Bantam Books, New York (1988)

Objectives: Each student in the class will be expected to demonstrate the ability to:

1. Design and write an instructional sequence using Hypercard that will teach one or more concepts.
2. Compare and contrast a minimum of two authoring languages or systems.
3. Prepare an instructional message using graphics, sound and character sets.

Assignments: There are five programming assignments for the semester. The assignments are due on the date indicated. They will be submitted on your disk accompanied by a hardcopy of the text, and a printout of any graphic screens.

The maximum points for each assignment is 50. Late assignments will be graded with the maximum points being available being the lowest number received by those who had submitted their work on time.

The following are the assignments:

1. Prepare a three page "page turning" program which would be the first segment of an instructional unit and would provide the student with information on how to use the program. The program should be called "HELLO" so that it will automatically be presented when the disk is booted. (Due July 10).
2. Prepare a question with appropriate feedback. The feedback should reflect your ability to use modifiers and conditioners. The program should be free of dead ends and endless loops. The feedback should be instructive. (Due July 24)

3. Prepare a program segment(s) that will demonstrate your ability to prepare use HyperCard to integrate video into an instructional program. (Due August 1)

4. Prepare a program segment(s) that demonstrates your ability to animate both words and figures. (Due August 10)

Review: You will prepare a three to five page review and comparison of an authoring system or language other than HyperCard. The paper will be accompanied by a program written in the reviewed language. It should be accompanied by a hardcopy and directions for using the program.

Project: The major project for the semester will be a computer assisted instructional program designed to teach one or more concepts. The lesson can include some, if not all, of the materials prepared for the assignments. The project will also include the use of the sound effect editor. (Due August 17)

Grading: Grades will be based on a normal curve with a 93% being an "A". A "B" will be 85%. The grades will be based on the total number of points assigned in the following manner

Quizzes	3 @ 100	300	
Assignments	4 @ 50		200
Review		100	
Project		200	
TOTAL		800	

Tentative Class Schedule

Summer 1990

June	26	Browsing Through HyperCard
	27	Backgrounds & Buttons
	28	Stack Organization
	29	Printing Stacks
July	3	Creating a Stack
	4	HOLIDAY
	5	Developing Backgrounds
	6	Unit Test I
July	10	The Layer Concept
	11	Cards & Background
	12	All About Fields I
	13	All About Fields II
July	17	Buttons I
	18	Buttons II
	19	Unit Test II
	20	Hypertalk I
July	24	Hypertalk II
	25	Messages
	26	Commands
	27	Properties
July	31	Functions I
Aug	1	Functions II
	2	Control Structures
	3	Unit Test III
Aug	7	Instructional Design I
	8	Instructional Design II
	9	External Resources I
	10	External Resources II
Aug	14	HyperCard Tools I
	15	HyperCard Tools II
	16	Review of Projects
	17	Review of Projects

COMPUTERS IN EDUCATION 512
EDUCATIONAL SOFTWARE

ALLENTOWN COLLEGE of SAINT FRANCIS de SALES

SUMMER 1989

Overview: The purpose of this course is to provide a comprehensive investigation of the critical elements of developing and maintaining an educational software collection.

The major units for the course will be (1) classification of software; (2) software evaluation; (3) software collections; (4) software maintenance; and (5) current issues.

Instructor: Dr. Pat McIntyre

Schedule: 11:10 - 12:00 MTWTh

Telephone: 282-1100 Ext. 401 (Office)
868-7754 (Home)

Office Hours: Daily 2:00 or by appointment

Objectives: Each student in the class will be expected to:

1. Develop a software catalog based on a reasonable classification of software.
2. Gain a substantive background in the evaluation of educational software.
3. Understand the requirements of a school/district software collection.
4. Become familiar with the rules and processes associated with maintaining a software collection.
5. Have an informed opinion on issues related to the use of computer software in the schools.

GRADING: This course will be graded on the basis of a set of activities which are described in a separate document. Each activity has a maximum point allocation; in some cases the points are fixed for the activity, and in others, the activity will be graded and points assigned according to the quality and thoroughness of the product.

Some activities will be required of all students; other are optional. Your grade will be determined by the number of points gained according to the following scale:

A	=	500 points
A-	=	450
B+	=	400
B	=	350
B-	=	300
C+	=	250
C	=	200
C-	<	200

Tentative Class Schedule

SUMMER 1989

June	26	Overview
	27	Classification of Software
	28	Drill & Practice Software
	29	Tutorials Software
July	3	Simulations Software
	4	HOLIDAY
	5	Material Production
	6	Software Review A. _____ B. _____
July	10	Sources
	11	Cataloging
	12	Goals & Objectives
	13	Software Review A. _____ B. _____
July	17	Instructional Design I
	18	Instructional Design II
	19	Instructional Design III
	20	Software Review A. _____ B. _____
July	24	Sources of Evaluations
	25	On-line Searches - RICE
	26	Instructional Resource Committee
	27	Software Review A. _____ B. _____
July	31	Previewing
Aug	1	Evaluation Forms

	2	Copyright Law	
	3	Software Review	A. _____
			B. _____
Aug	7	Networked Software	
	8	Disk Maintenance I	
	9	Disk Maintenance II	
	10	Software Review	A. _____
			B. _____
Aug	14	Disk Maintenance III	
	15	Multiple Copy Policies	
	16	Statewide Contracts	
	17	Software Review	A. _____
			B. _____

REQUIRED ACTIVITIES

SOFTWARE CATALOG: (100 Pts. Max.) Using the Disk Management System used in the Microcomputer Resource Center, you will prepare a catalog for a software collection of not less than twenty (20) disks.

You will need to submit a master list, examples of subject, level, and use lists {two or three of each}, alphabetical list, publishers list, a search request form, and three (3) searches done on the system.

Disk Management System disks will be provided to each member of the class. They will remain the property of the Center; they will need to be returned at the end of the class.

ANNOTATED BIBLIOGRAPHY: (50 Pts. Max.) You are to prepare an annotated bibliography on a topic related to computer software. The bibliography is to contain no less than ten articles. Twenty would be more likely. The bibliography should include a complete citation that would enable anyone to locate the article or book, and a paragraph or two which would alert the reader to the content.

The topics suitable for selection are (1) classification of educational software; (2) software evaluation; (3) software collections; (4) software maintenance; (5) instructional design and educational software; and (6) issues related to software. You are not to select the review of specific types of software for this activity. Use the class schedule as a guide.

CLASS PRESENTATION: (50 Pts. Max.) Each member of the class will be expected to make a presentation of a piece of software that they think is worthy of special note or value. A schedule will be prepared, and you will sign

up on a first come, first serve basis. When you sign up, you will need to specify the software that you will present in order to avoid duplication. Please check the sign up sheet to see what has already been reserved.

You should select software that you have used in a classroom setting, if possible. The value of the presentation may be tied more to your experience with the software than the actual software itself. Your presentation should focus on how to use the software in a classroom setting more than on the operation of the software.

In your presentation you should address the following items:

- Why you selected the program?
- What learning would be accomplished using the program (SLO)
- What prerequisite skills are needed?
- What instructional configuration would be best?
- How could the software be used at different grade levels?
- How does the software compare with other pieces of software on the same topic?

MATERIAL PRODUCTION: (50 Pts. Max.) You are to prepare a set of instructional materials using a variety of material generating software. The minimum requirement will be ten different items using at least five different software packages.

Some suggested products are handouts, transparencies, word find puzzles, cartoons, crossword puzzles, drill sheets, gradebook printouts [you will need to produce a sample class.], etc.

RESEARCH CRITIQUE: (50 Pts. Max) There is a mounting body of research surrounding the use of computers in the educational setting. It is important not only to be aware of the research, but to be able to apply a reasonable set of criteria to the research so that the real value can be determined. The purpose of this activity is to review the notion of a critique developed in Education 501, and to extend your knowledge into relevant research.

You are to select a research article dealing with some aspect of computer assisted instruction, educational applications of computers, or instructional design. The bibliography distributed in class should provide a good source of potential articles. You are to prepare a critique, remembering that a critique is not a summary of the article, but a critical review in which accepted criteria are applied.

You are to submit the critique and the article critiqued for review.

[NOTE: This activity is not required of students who have not taken or are not taking Educational Research. I you are presently taking Education Re-

search, you may not submit a critique that is being submitted in that class. If you took Educational Research at another institution, I would suggest that you obtain a copy of Gay's Educational Research as a source of criteria to apply.]

OPTIONAL ACTIVITIES

SOFTWARE SCREENING: (5 Pts. each/ 200 Pts. Max.) Some students in this course are mainly concerned about seeing as much software as possible so that they will have a better basis for making judgements concerning software purchases. The object of this activity is to provide them with an opportunity to screen as many as forty programs.

No software that is previewed or demonstrated in class may be subsequently used for this assignment.

Screening forms are available in the Microcomputer Resource Center.

You may submit no more than five screenings per week. It will be assumed that you will not screen software that you are already familiar with. Screening forms submitted will not be returned; they will be placed in the evaluation file in the Center.

EVALUATING EVALUATION FORMS: (50 pts. Max.) The purpose of this activity is to evaluate a particular evaluation form being used for a specific purpose.

You will decide that you need an evaluation form to be used in the review of software for a specific purpose, i.e., drill and practice in math facts for students in grade 4. You should look over the available forms -- Evaluation of Educational Software: a guide to guides is a good source -- and select two evaluation form that might serve the purpose.

Then you will select a minimum of five software programs/packages and evaluate them using the selected forms. You might want to use a search on the Center system.

You will then prepare a two to three page report evaluating the evaluation forms, not the programs. The evaluation should include a response to the following questions:

1. Was there information about the programs that should have been included in the forms, but which was not provided for?

2. Could another teacher read the evaluations and come to a valid conclusion without seeing the programs?

You may offer your own suggestions about modifying the evaluation forms to make them more practical.

[NOTE: This activity may be repeated for credit using either a different set of forms and/or a different search strategy; the same programs may not be used.]

MACHINE COMPARISON: (50 Pts. Max.) Many software producers package the same program for a variety of machines. In so doing, they need to modify the program to meet the hardware requirements of the different systems. In some cases this can change the instructional program. It is the purpose of this activity to exam what happens when a piece of software is modified for different systems.

You will select a piece of software that is available on three or more systems (IBM, Apple, Atari, etc.), and you are to prepare a two to three page report in which you will examine the operational differences. Of particular importance will be the treatment of graphics, sound, and user input. You are to evaluate whether or not the differences have an effect on the effectiveness of the program.

FIELD TESTING: (50 Pts. Max.) One of the best processes for evaluating software is to have the program used by a subject for whom it might be purchased. The field testing of software is a critical element in any validation, and yet because of economic considerations, and the fear of piracy, the opportunity is often not available. The purpose of this activity is to see how a sample of end users might interact with a selected piece of software.

Select a piece of software that has been screened as a potential purchase. Then have at least three students use the software under your supervision. The students will need to be similar to the intended end user. Discuss the software with them, and prepare a two to three page review of the software. Include in the report a brief description of the students.

[NOTE: This activity may be repeated for credit. You may use the same students.]

CLASS PRESENTATION: (50 Pts. Max.) Some students in the class have special expertise in the areas to be covered. If they chose to do so, it may be possible for them to assume the responsibility for a particular class presentation.

Review the class schedule, and if you think that you would like to make one of the presentations listed, make an appointment to discuss it with me. All class presentations must be settled before July 1.

SOFTWARE REVIEW: (30 Pts. Max.) A review of a program is a personal response made to a piece of software. The review differs from an evaluation because it is based on an individual's opinion of the software rather than the systematic application of a set of criteria.

Individuals doing reviews are not limited to formal guidelines or processes, but they may choose to use them. A good source of sample reviews can be found in The Computing Teacher each month. A set of reviews prepared by student's in prior courses are on file in the Microcomputer Resource Center.

A review would normally be about one thousand words in length, and should include a complete bibliographic citation.

[NOTE: This activity may be repeated for credit.]

BACKUP COPIES: (25 Pts. Max.) The purpose of this activity is to provide you the opportunity to judge the effectiveness of making your own backup copies of protected software.

Obtain in the Microcomputer Resource Center a copy of either Copy 2 Plus or Locksmith 5.0 and the related documentation. The documentation may be checked out of the Center overnight, but the copy program may not. Based on the documentation, select a program for copying and prepare a copy according to the process described. Keep in mind that the process may not be as simple as it is described. Check your copy to see that it works, not just boots.

This activity should not be attempted until after the presentation in class beginning on July 20th.

Submit the copy, a copy of the distributors backup policy, and a short one page reaction to the activity. The copy will not be returned to you; a blank disk will be.

[NOTE: This activity may be repeated using a different copying system and a different piece of software.]

COMPARISON CHART: (100 Pts. MAX.) One of the most successful presentations of comparative data on software is the charts that are presented in Electronic Learning. The purpose of this activity is to provide you the opportunity to prepare a chart with the same general framework.

In order to do this activity you will need to locate at least five programs with the same general purpose or scope. You can use the Electronic Learning as a guide, but you can not knowingly use the same chart that has been used, even if you have a new collection of programs.

SOMETHING ELSE: (100 Pts. Max.) Someone always has a better idea or an unforeseen need. You may request, in writing, any alternative activity that you think might fall within the scope of the course, but is not covered by the suggested activities.

All "something else's" must be submitted for approval before the midterm.

COMPUTERS IN EDUCATION 530
THE COMPUTER CURRICULUM and OTHER ISSUES

Allentown College of St. Francis de Sales

SUMMER 1990

Overview: The purpose of this course is to provide an overview of how computer science an/or computer literacy fits into the K-12 curriculum. Issues concerning both content and implementation will be presented.

The content will include languages, computer assisted instruction, and the history of computers. Implementation will include strategies and curriculum planning.

Instructors: Dr. Pat McIntyre

Schedule: Mondays and Wednesdays, 6:00-9:00

Telephone: 282-1100 Ext. 401 (Office)
868-7754 (Home)

Textbook: The Information Age Classroom: Using the Computer as a Tool, T. Cannings and S. Brown (Ed.), Franklin, Beedle & Associates, Irvine, CA, 1986

Office hours: Daily 10:00 or by appointment

Objectives: Each student in the class will be expected to:

1. Demonstrate a knowledge of those psychological and developmental principles that can be argued for the inclusion of microcomputers in the school setting and for their effective instructional use.

2. Demonstrate a knowledge of the historical development of computer science and computer education.

3. Develop an informed position on some of the issues
concerning the use of computers in the schools.

4. Become familiar with the issues of scope and sequence in area of computer education curriculum.

5. Become familiar with personnel and material resources in the field of computer education.

Tentative Class Schedule

Summer 1990

23	JUNE	A.	Introduction to the course
		B.	Historical Perspective
			a. Computer Science
			b. Computers in Education
		C.	Discussion: The Future - The Year 2000
25	JUNE	A.	Learning Theory: The Brain as an Information Processing System
		B.	Discussion: What are the Implications for Computer Education Curriculum?
		C.	CAI Research
30	JUNE	A.	Child Development (Piaget)
		B.	LOGO and the Curriculum: Computer Cultures
		C.	Discussion: What are the Implication for Computer Education Curriculum?
2	JULY	A.	Topic: Schools of the Future: The Impact of Technology
		.	Discussion: What will be the Impact of Technology in the Near Future?
7	JULY	A.	Topic: State Support of Computer Education: Preservice, Inservice, and State Guidelines.
		B.	Discussion: What help do teachers need?
9	JULY	A.	Computer Education: Scope and Sequence
		B.	Discussion: What Should the Curriculum Look Like and Who Should be Responsible?
		C.	Accountability and Cost Effectiveness
		D.	Discussion: Should the Value of Computers be Based on Economics?
14	JULY	A.	Topic:Vocational Education and the New Technology
		B.	Discussion: What Might be the Effects of Academic/Vocational Rivalry Regarding Computer Education?

C. Planning for Change
D. Discussion: How Should We Plan Effectively for Use of Computers in the Curriculum

16 JULY
A. Topic: Access and Equity in Computer Education: National and State Studies
B. Discussion: What are the Implication for Computer Education Curriculum?
C. Ethics and Issues for Schools
D. Discussion: How Might the Ethical Issue Concerning Computers be Taught?

21 JULY
A. District Goals: Computer Literacy?
B. Discussion: How Should District Goals be Determined?
C. Artificial Intelligence
D. Discussion: What are the Implications for Computer Education Curriculum?

23 JULY
A. Computers in the Schools: Evolution or Revolution
B. Discussion: The Future - The Year 2000 (Revisited)

Assigned Readings:

23 JUNE 1* Going Digital

25 JUNE 3 Computers in Education: Setting a Research Agenda
4 Synthesis of Research on Electronic Learning

30 JUNE 2 Sometimes Children are the Best Teachers
11 Journey through Mathland: An Interview with Seymour Papert
14 A Computer Language at the Crossroads: LOGO
15 Creating a LOGO Environment
16a LOGO Frightens Me
16b LOGO Revisited

2 JULY 47 Teacher Isolation and School Reform
61 Nine Issues: A Guide to Issues in Computer Education

7 JULY 7 Education's New Challenge
10b How State Governments are Helping to Define Computer Literacy

		48	In-Service: What You Need to Know Before You Begin
9	JULY	12	The Computer as Palette and Model Builder
		17	The Road to Computer Literacy: A Scope and Sequence Model
		55	Developing and Implementing a Computer Curriculum: the Problems, the Contents, and the Future
14	JULY	5	Computers in Education: Promise and Reality
		20	How One School Does It Right
		49	Reflections on the Educational Potential and Limitations of Microcomputers
		50	Acquisition of Computer Facilities
		51	Adding a Micro to Your School Picture
		52	Selecting a Microcomputer: Its More than the Hardware
		53	Computer Peripherals: or What Computers Hath Wrought
		54	A 4-Stage Model of Development for Full Implementation of Computers for Instruction in a School System
16	JULY	45	Sorting Out the Equity Issues
		46	Sex Equity: Increasing Girls' Use of Computers
		26a	ICCE Publishes Statement on Software Copyright Violations
		26b	Software Copyright Interpretation
21	JULY	56	Exploiting Present Opportunities of Computers in Science and Mathematics Education
		8a	Computer Literacy - What Is It?
		8b	In Defense of a Comprehensive View of Computer Literacy
		9	Stop Saying "Computer Literacy"!
		10	The Best Way to Teach Computer Literacy
		10c	What Is Computer Literacy?
		18	Mission: Define Computer Literacy
		19	Computer Literacy: What Is It?
23	JULY	6	Computers in Schools:21 Critical Issues for Policy Decisions
		21	Computers in Schools : What Revolution?
		43	Cautions on Computers in Education
		44	Machines Don't Dehumanize, People Do
		61	Nine Issues: A Guide to Issues in Computer Education

*Article number from The Information Age Classroom: Using the Computer as a Tool other readings may be provided by the guest speakers and/or instructors.

Activities

Term Paper: You are to prepare a paper that address the topic of what schools and teachers should be doing to respond to the microcomputer and its potential for children and schools. Some, if not all, of the topics presented in class should be considered.

The paper will be judged on the following criteria:

a. Thoroughness and breath of the issues addressed.

b. Clarity of presentation.

c. Extent of documentation and sources cited.

The topics and issues presented in class should provide a framework for the paper. An acceptable paper would not be less than 15 pages long.

Teleconference: A teleconference on the topic of "Should all students be required to learn a computing language?" will be held throughout the semester on the FIDO board at 438-4495.

Each member of the class is to provide some input or comment each week. Participation will be judged on the value of the questions, insights, and information provided for other participants.

Book Reviews: Each member of the class is to read and review two books during the semester. The books need to relate to current issues of curriculum and/or computer literacy. It will be assumed that you will only report on books that are being read as part of this course. Books that you have already read or books that are being read in another current course are not acceptable.

Some suggested books are:

Mindstorms, Seymour Papert, Basic Books, New York, 1980

The Second Self, Sherry Turkle, Simon and Shuster, New York, 1984

The Third Wave, Alvin Toffler,Bantam Books, New York, 1981

The Soul of a New Machine, Tracy Kidder, Avon Books, New York, 1981

From Baker Street To Binary, Henry Ledgard, E. Patrick McQuaid, and Andrew Singer, Mc Graw-Hill Book Co., New York, 1983

The Computer in the School: Tutor, Tool, Tutee, Robert Taylor, Teacher's College Press, New York, 1980

The Micro Millennium, Christopher Evans, Washington Square Press, New York, 1979

The Computer Establishment, Katherine Fishman, Mc Graw-Hill Paperbacks, New York, 1981

Computer Power and Human Reason, Joseph Weizenbaum, W.H. Freeman & Co.,1976

The Making of the Micro: A History of the Computer, Christopher Evans, Van Nostrand Reinhold, 1981

The Gutenberg Galaxy, Marshall McLuhan, Mentor Books, New York, 1969

You may select your own books, but they need to be approved by one of the instructors.

The first book review is due on July 2nd, and the second is due on July 16th.

Participation: Each member of the class will be expected to attend all class meetings and be present for the entire session.

Grading:

Grading will be based on the assignments and classroom participation on the following scale:

Term Paper	50%
Teleconference	20%
Book Reviews	20%
Participation	10%

COMPUTERS IN EDUCATION 535
MICROCOMPUTER SYSTEMS

Allentown College of St. Francis de Sales

SUMMER 1991

Overview: The purpose of this course is to examine the architecture of some of the more common microcomputer systems, and to learn some of the basic concepts of computer construction and maintenance. The course should provide some insight into the internal structure and mechanisms of microcomputers systems. The Apple computer and the 6502 microprocessor will be used as the main instructional examples. The general model will provide a basis for studying and understanding other systems.

Instructor: Dr. Pat McIntyre

Schedule: MTWTh - 1:00-1:50

Telephone: 282-1100, Ext. 401 (Office)
868-7754 (Home)

Office Hours: Daily 10:00 or by appointment

Objectives: Each student in the class will be expected to demonstrate:

1. A knowledge of the structure and operation of a microcomputer system.
2. The ability to conduct preventative maintenance and to do routine diagnostic testing of microcomputers.
3. A knowledge of the similarities and differences between some of the more common microcomputer systems.
4. The ability to use a variety of microcomputers and peripherals.

Tentative Class Schedule

		TOPICS	LABORATORY
June	23	Introduction	1. Computer Assembly
June	24	Microprocessors, Microcomputers & Microcomputer Systems	
June	25	The Binary Number System	
June	26	Hexadecimal Notation	
June	30	Gates & Elementary Logic	2. Rocky's Boots
July	1	The 6502 Memory Map	
July	2	RAM and ROM	
July	3	Diagnostics	
July	7	The CPU	3. Disk Drives
July	8	The Microcomputer System	
July	9	Instructional Sets	
July	10	I/O Operations	
July	14	Telecommunication	4. Bulletin Board
July	15	Bulletin Boards	
July	16	MIDTERM	
July	17	NO CLASS	
July	21	Printers	5. Upload & Download
July	22	Monitors	
July	23	Disk Formats	
July	24	Disk Drives	
July	28	DOS	6. Sector Map
July	29	Semiconductor Mass Storage	
July	30	Benchmarks	
July	31	The "Game Port"	
August	4	Networks and Bridges	7. IBM
August	5	Hard Disks	
August	6	Optical Storage	
August	7	Microprocessors	
August	11	8-bit vs 16-bit Microcomputer	8. Benchmarks
August	12	68000 Microprocessor	
August	13	Macintosh	
August	14	FINAL	

Grading: Grades will be based on the total number of points earned through assignments, laboratory exercises, and tests. Missed assignments and laboratory exercises may be made up, but the maximum number of points that can be earned by a late assignment or exercise will be equal to the minimum grade earned by any student who completes the assigned work at the regular time.

A total of 500 points will be available according to the following:

Laboratory Exercises:		200 points
1. Computer Assembly	25	
2. Rocky's Boots & Peek & Poke	25	
3.		
4. Bulletin Board	25	
5. Uploading & Downloading	25	
6. Sector Editor	25	
7. IBM Tutorial	25	
8. Benchmarks	25	
Peripheral Introduction		100
Unit Tests - 2 @ 100		200
TOTAL		500

COMPUTER EDUCATION 550
TEACHING COMPUTER SCIENCE

Allentown College of St. Francis de Sales

Summer 1992

Overview: A study of the research and authoritative opinion on the goals, objectives and methods of teaching computer science with special interest in concepts of structured programming and software engineering.

Instructor: Dr. Pat McIntyre

Schedule: Monday - Thursday 1:00 - 3:00

Office Hours: Daily 10:00 and by appointment

Telephone: 282 - 1100 (Office)
868 - 7754 (Home)

Text: Teaching Computer Science. Pat McIntyre, Krieger Publishing Company, Malabar, FL (1989)

Objectives: Each student in the class will be expected to demonstrate:

1. The ability to design and write an instructional sequence for classes in computer science.
2. Knowledge of the three common languages used in the pre-college setting.
3. Understand of the basic elements of structured programming.
4. A variety of methods useful in a computer science classroom.

Grading: Grades will be based on a normal curve with a 93% being an "A". A "B" will be 85%. The grades will be based on the total number of points assigned in the following manner

Tests	4 @ 100	400
Assignments	8 @ 25	200
Curriculum Review		100
Term Project		200
TOTAL	900	

Tentative Class Schedule

Summer 199

June	26	History of Computer Science
	27	Status of Computer Science in the Schools
	28	Goals for the Computer Science Curriculum
	29	Issues of Accreditation and Certification
July	3	Planning Objectives
	4	HOLIDAY
	5	Performance Objectives - Cognitive
	6	Unit Test I
July	10	Performance Objectives - Affective
	11	Performance Objectives - Psychomotor
	12	Curriculum - History of Computers
	13	Curriculum - Programming Languages
July	17	Curriculum - Applications Software
	18	Curriculum - Hardware
	19	Unit Test II
	20	Programing Concepts
July	24	Programming Syntax I
	25	Programming Syntax II
	26	Application Concepts
	27	Structured Programming I
July	31	Structured Programming II
Aug	1	Structured Programming III
	2	Documentation
	3	Unit Test III
Aug	7	Instructional Organization I
	8	Instructional Organization II
	9	Teaching Strategies
	10	Media
Aug	14	Equipment Management I
	15	Equipment Management II
	16	Professional Development
	17	Unit Test IV

Computer Science Program

a. Overview

This program is designed for the pre-college teacher who is teaching computer science. The program is based on the College Entrance Examination Board's advanced placement computer science program -- a program which is consistent with the Association for Computer Machinery's recommendation for undergraduate Computer Science. A graduate of the program would be prepared to serve as an instructor or a resource person for the CEEB Advanced Placement Program.

b. Program Organization

Coordinator Mr. John Meinke

Faculty/Advisors [Vita are in Appendix B.]

Mr. John Meinke
Dr. Julius Bede
Dr. Andrew Kreutzer

Program

The program has five courses and a project. Three of the courses are required. (See below.) Two courses are cross referenced with graduate courses in the Master of Science in Management Information Systems Program of Allentown College.

The four required courses will be offered on a three-year cycle, and two of the courses are offered more regularly in the Master of Science Program in Management Information Systems. Additional elective courses will be available from the programs in Mathematics and Computers in Education. In addition to the listed courses, candidates for the degree will have the opportunity to take workshops, independent study, internships, and special topic seminars. With the approval of their advisors, candidates will be able to customize their programs to take into account their prior experience and professional goals.

A student has six elective credits. With the approval of the student's advisor, the elective credits can be taken as workshops.

Every student must complete a three-credit project. The project can be taken as three one-credit courses. In addition there is a nine credit core requirement in professional education.

The total number of credits required for graduation is thirty.

Courses

- CE 510 Computing for Educators*
- CE 515 Problem Solving with Pascal*
- CE 520 Advanced Programming Concepts*
- CE 525 Computer Concepts
- CE 530 File Processing and Data Structures
- CE 600 Project: Computer Science*

Workshops

- Introduction to the Macintosh
- Introduction to Pascal
- Desktop Publishing
- Principles of Structured Programming
- LOGO and Structured Programming
- Pascal with Karel the Robot
- Telecommunications
- Application Software for Teachers

Recommended Electives

CE 515	Advanced BASIC Programming for Educators
CE 520	Authoring Languages and Systems
CE 530	The Computer Curriculum and Other Issues
CE 535	Microcomputer Systems
CE 550	Teaching Computer Science
MA 525	Probability and Statistics

c. Course Descriptions

CS 510 Computing for Educators* (3 Credits)

An introduction to the operating systems of computers, the use of application software, social issues related to computers and computing, and the basic rudiments of programming using structured programming as characterized by top-down design with step-wise refinement.

* Required Course.

CS 515 **Problem Solving with Pascal*** (3 Credits)

A course designed to develop problem solving skills with the programming language Pascal with an emphasis on preparation for the teaching of a pre-college Pascal course. The course will focus on algorithm development and top-down structured programming with step-wise refinement.

CS 520 **Advanced Programming Concepts*** (3 Credits)

A course designed to develop proficiency with the programming language Pascal and an in depth examination of data structures and the analysis of algorithms. In addition, various aspects of the undergraduate computer science curriculum will be presented, including where the various topics in a Pascal course are presented. Prerequisite: CS 515 (Cross listed as IT 502).

CS 525 **Computer Concepts** (3 Credits)

An overview of computer system organization, logic, microarchitecture, macroarchitecture, data communications, operating systems, and assembly languages. Hardware and software concepts will be discussed as they relate to the system analysis and design process and the development of applications software. Prerequisite: CS 520 (Cross listed as IT 501)

CS 560-9 **Workshops in Computer Science** (1-3 Credits)

Specialized workshops dealing with the application of educational technology in the educational environment.

CS 570 **Readings in Computer Science** (1-2 Credits)

An independent reading class for students with special needs. The reading list is to be developed by the student and instructor. Prerequisite: Graduate status. By arrangement with instructor.

CS 580 **Internship in Computer Science** (1-2 Credits)

A directed instructional project in which the student receives credit for conducting workshops, assisting in the teaching of courses, and/or working in an instructional laboratory. Prerequisite: Graduate status.

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* Required Course.

CS 590 **Special Topics: Computer Science** (1-3 Credits)

Course offered periodically on topics of special interest.

CS 600 **Project: Computer Science*** (1-3 Credits)

The terminal course in the Computer Science Program. A total of three credits required for the Master of Education Degree in Computer Science. These credits may be taken one at a time. Prerequisite: Approval of advisor.

* Required Course.

CS 510
COMPUTING FOR EDUCATORS
(3 credits)

COURSE DESCRIPTION: An introduction to the operating systems of computers, the use of applications software, social issues related to computers and computing, and the basic rudiments of programming using structured programming as characterized by top-down design with stepwise refinement.

COURSE OBJECTIVES: This course is one of a sequence of three (3) courses designed to prepare the secondary teacher of computer science to present the Advanced Placement course in Computer Science. As the first course in the sequence, it will stress

TEXTBOOKS:

"Advanced Placement Course Description - Computer Science", May 1989, The College Board.

Teacher's Guide to Advanced Placement Courses in Computer Science, 1983, Advanced Placement Program of the College Board.

Simpson, A., The Best Book of Lotus 1-2-3, 1987, Howard W. Sams and Company, Indianapolis, IN.

FORMAT: The format of the course will be lecture/discussion, lecture being the primary component. The intent of the course is to provide a foundation for developing expertise in programming and problem solving. As such, emphasis will be placed on problem solving techniques, algorithm development, and algorithm refinement. The course will also present an overview of hardware, software, and social responsibilities. Algorithm implementation will be in the context of the LOTUS 1-2-3 spreadsheet macro capability and the macro capability in higher level work processors with an emphasis on structured design. The specific applications will involve tools that can be applied in the secondary classroom environment.

TOPIC OUTLINE (including topics derived from the AP Computer Science examination topic outline):

Computer Systems

1. Major hardware components
   - a. Primary memory
   - b. Secondary memory
   - c. Processors
   - d. Peripheral devices
2. Systems software
   - a. Language translators
   - b. Operating systems
   - c. File systems
3. Types of systems
   - a. Single-user systems
   - b. Multiprogramming systems
     - i. Time-sharing systems

ii. Batch systems
c. Networks
4. Applications software
a. Word processing
b. Spreadsheets
c. Data base
d. Specific applications software
i. Payroll applications
ii. Accounts receivable
iii. Inventory control

Responsible Use of Computer Systems

1. Privacy
2. Reliability of systems
3. Legal issues and intellectual property
4. Social ramifications of computer applications

Lotus 1-2-3

1. Spreadsheets
2. Data Base
3. Macros
a. Programs
b. Problem Solving methodology - Polya
c. Implementation of macros in Lotus 1-2-3 - programming assignments
4. Macros in word processing

CS 515
PROBLEM SOLVING WITH PASCAL
(3 credits)

COURSE DESCRIPTION: A course designed to develop problem solving skills with the programming language Pascal with an emphasis on preparation for the teaching of a pre-college Pascal course. The course will focus on algorithm development and top-down structured programming with step-wise refinement. (Prerequisite: CS 510 or equivalent)

COURSE OBJECTIVES: This course is one of a sequence of three (3) courses designed to prepare the secondary teacher of computer science to present the Advanced Placement course in Computer Science. As the second course in the sequence, it will stress the topics encompassed in the description of the AP Computer Science A course, with particular emphasis on methods of teaching the course. As such, the topic outline stresses the topics contained in the "Advanced Placement Course Description - Computer Science" publication distributed by the College Board, particularly those topics related to the A course.

TEXTBOOKS:
Mandell, S. and C. Mandell, Computer Science with Pascal for Advanced Placement Students, 1985, West Publishing Company, St. Paul, MN.

"Advanced Placement Course Description - Computer Science", May 1989, The College Board.

Teacher's Guide to Advanced Placement Courses in Computer Science, 1983, Advanced Placement Program of the College Board.

FORMAT: The format of the course will be lecture/discussion, lecture being the primary component. The intent of the course is to develop expertise in the programming language Pascal, currently the choice of the AP Computer Science Development Committee as the language to be used in the AP Computer Science course. As topics are presented, there will be an indication of how these relate to other potential languages that may ultimately become languages acceptable for preparation of students for the AP Computer Science examination, particularly Modula-2 and ADA. The emphasis will be on programming style, features offered by current high-level programming languages, and features that would be desirable in software engineering. Students will gain expertise in programming in Pascal through regular programming assignments.

TOPIC OUTLINE: (including topics derived from the AP Computer Science A examination topic outline):

A. **Programming Methodology**
1. Specification
    a. Problem definition and requirements
    b. Program and subprogram specification
        i. pre-/postconditions
        ii. exceptional conditions
    c. Abstract data types
2. Design

- a. Decomposition
  - i. Criteria
    - (a) adaptability
    - (b) minimizing dependencies
  - ii. Information hiding
- b. Top-down versus bottom-up methodologies
- c. Stepwise refinement of subprograms and data structures
- d. User interface
  - i. Error checking
  - ii. Help facilities

3. Coding
   - a. Structure
   - b. Style and clarity of expression
     - i. mnemonic identifiers
     - ii. indentation
4. Program correctness
   - a. Testing and debugging
     - i. Relation to design and coding
     - ii. Generation of test data
   - b. Verification
     - i. Assertions and invariants
     - ii. Reasoning about programs
5. Documentation

B. Features of Programming Languages

1. Data
   - a. Types and declarations
   - b. Scalar data types
     - i. Boolean
     - ii. Character
     - iii. Integer
     - iv. Real
     - v. Subrange
     - vi. Enumerated
     - vii. User defined
   - c. Structured data types
     - i. Arrays
     - ii. Records
     - iii. Sets
     - iv. Strings
2. Block structure and scope of identifiers
3. Expressions
   - a. Infix notation and operator precedence
   - b. Standard functions
4. Assignment statements
5. Control structures
   - a. Sequential execution
   - b. Conditional execution/decision structures
   - c. Looping/repetition structures
6. Input and output
   - a. Interactive I/O
   - b. File structures
7. Subprograms

- a. Procedures and functions
- b. Parameters
  - i. Actual and formal
  - ii. Value and reference
- c. Recursion

8. Program annotation (comments/documentation)
9. Notation for language definitions
   - a. Syntax diagrams
   - b. Backus-Naur form

C. Data Structures

1. Linear
   - a. Lists
2. Representations
   - a. Sequential

D. Algorithms

1. Searching
   - a. Sequential (linear) search
   - b. Binary search
2. Sorting
   - a. Simple sorts
     - i. exchange sort
     - ii. insertions sort
     - iii. selection sort
     - iv. bubble sort
   - b. Other sorts
     - i. merge-sort

E. Computers in Society/Ethics

1. Case Study

CS 520
DATA STRUCTURES AND ALGORITHMS
(3 credits)

COURSE DESCRIPTION: A course designed to develop proficiency with the programming language Pascal and an in depth examination of data structures and the analysis of algorithms. In addition, various aspects of the undergraduate computer science curriculum will be presented, including where the various topics in a Pascal course are applied. (Prerequisite: CS 515 or equivalent, Cross listed as IT 502)

COURSE OBJECTIVES: The course objectives include: to present a formal approach to software design and programming techniques, to develop definitions and concepts of the abstract top-down bottom-up design methodology, to understand data organization and data accessing concepts, to practice structured problem solving in a high level programming environment. This course is one of a sequence of three (3) courses designed to prepare the secondary teacher of computer science to present the Advanced Placement course in Computer Science. As the third course in the sequence, it will stress the topics encompassed in the description of the AP Computer Science AB course, with emphasis on methods of teaching the course, particularly the analysis of algorithms, data structures, and dynamic storage allocation components. As such, the topic outline stresses the topics contained in the "Advanced Placement Course Description - Computer Science" publication distributed by the College Board, particularly those topics related to the AB course.

TEXTBOOKS:

Mandell, S. and C. Mandell, Computer Science with Pascal for Advanced Placement Students, 1985, West Publishing Company, St. Paul, MN.

"Advanced Placement Course Description - Computer Science", May 1989, The College Board.

Teacher's Guide to Advanced Placement Courses in Computer Science, 1983, Advanced Placement Program of the College Board.

FORMAT: The format of the course is a combination of instructor lectures, class discussions, student presentations and program design and coding assignments. The intent of the course is to develop expertise in the programming language Pascal, currently the choice of the AP Computer Science Development Committee as the language to be used in the AP Computer Science course, and particularly those features related to analysis of algorithms, data structures, and dynamic storage allocation. As topics are presented, there will be an indication of how these relate to other potential languages that may ultimately become languages acceptable for preparation of students for the AP Computer Science examination, particularly Modula-2 and ADA. The emphasis will be on programming style, features offered by current high-level programming languages, and features that would be desirable in software engineering. Students will gain expertise through regular programming assignments demonstrating implementation and use of data structures.

TOPIC OUTLINE (including topics derived from the AP Computer Science AB examination topic outline):

A. Features of Programming Languages
- a. Polish prefix notation
- b. Polish suffix notation

B. Data Structures

1. Linear structures
   - a. Variations
     - i. Stacks
     - ii. Queues
     - iii. Deques
   - b. Representations
     - i. Linked lists
       - (a) singly
       - (b) doubly
       - (c) circularly
2. Tree Structures
   - a. Terminology
   - b. Binary trees
     - i. Representations
     - ii. Operations
       - (a) insertions
       - (b) deletions
       - (c) traversal
3. Other linked structures
   - a. Sparse matrices

C. Algorithms

1. Analysis of algorithms
   - a. The meaning of "big-O" (order) notation
     - i. Worst case
     - ii. Best case
     - iii. Average case
2. Searching
   - a. Hashing schemes
   - b. Searching an ordered binary tree
     - i. Ordering a binary tree
   - c. $O(n)$ versus $O(\log_2 n)$ searching times
3. Sorting
   - a. Other sorts
     - i. quicksort
     - ii. radix sort
   - b. $O(n^2)$ versus $O(n\log_2 n)$ sorting times
4. Numerical algorithms
   - a. Approximations
     - i. zeros of functions
     - ii. Monte-Carlo method
   - b. Numerical accuracy
     - i. Representation error
     - ii. Propagation error
     - ii. Precision of approximations

D. Computers in Society/Ethics

1. Case Study

E. AP Computer Science AB Examination Free Response Questions

1. Sample questions
2. Grading - the rubric employed for sample questions

CS 525
COMPUTER CONCEPTS
(3 credits)

COURSE DESCRIPTION: An overview of computer system organization, logic, microarchitecture, macroarchitecture, data communications, operating systems, and assembly languages. Hardware and software concepts will be discussed as they relate to the system analysis and design process and the development of applications software. Prerequisite: CS 520. (Cross listed as IT 501)

COURSE OBJECTIVES: This course is designed to provide an understanding of how the computer works architecturally and an understanding of basic operating systems principles. As such, it provides a framework for where the topics presented in CS 515 and CS 520 apply.

TEXTBOOK:
Meinke, J., Introduction to Computer Organization, Architecture, and Operating Systems Concepts, manuscript in preparation.

FORMAT: Due to the technical nature of the material involved, the course is a straight lecture course.

TOPIC OUTLINE:

A. Number Systems and Representations
1. Positional Notation
2. Integer Representtion
3. Floating Point Representation
4. Character Representation

B. Levels of Computer Architecture
1. The Processor-Memory-Switch Level
2. The Instruction Level
3. The Logic Level
4. The Circuit Level
5. Technologies

C. Combinational Logic
1. Minimization of Logic Functions
2. Algebraic Function Simplification
3. Karnaugh Maps
4. The Quine-McCluskey Technique
5. Product of Sums Notation
6. NAND/NOR Logic

D. Sequential Logic
1. Memory Units
2. The J-K Flip-Flop
3. Design of a Complement Circuit
4. Design of a Shift Register

E. The Central Processor
1. Interfacing the Central Processor with the Memory
2. The Instruction Cycle
3. A Hypothetical Instruction Set
4. Addressing Modes
   a. Indexed Addressing

b. Indirect Addressing
c. Stack Architecture
d. Base-Displacement Addressing

5. Peripheral Interface

F. Operating Systems Principles

1. Job-by-Job Processing
2. Early Batch Systems
3. Multiprogramming
   a. Processes
   b. Accounting Principles
   c. SPOOLing
   d. Process Switching
   e. Shared Code
   f. Batch Processing in a Multiprogramming Environment
   g. Time Sharing
   h. Hybrid Systems
4. Real Time Processing
5. Memory Protection
6. Structure of the Operating System
7. Multiprocessing

G. Memory Management

1. Virtual Memory
2. Segmentation
3. Paging
4. Replacement Techniques
5. Placement Algorithms
   a. First Fit
   b. Best Fit
   c. The Buddy System
6. Fragmentation and Garbage Collection

H. Language Translators

1. Translator Components
   a. Lexical Analysis
   b. Syntax Analysis
   c. Semantic Analysis
   d. Intermediate Code Generation
   e. Optimization
   f. Code Generation
2. Assembler Construction
   a. Two Pass Assembers
   b. Object Code
3. The Linking Loader

I. Scheduling

1. Resources to be Scheduled
   a. Processor Time
   b. Memory
   c. Device Allocation
2. Algorithms
   a. First Come First Served
   b. Last In First Out
   c. Shortest Job First
   d. Shortest Remaining Time

e. Round Robin
f. Multi-Level Feedback

3. Aging

Deadlock

1. Definition
2. Avvoidance - the Banker's Algorithm
3. Detection
4. Recovery

J. File Systems

1. Logical and Physical Organizations
2. File Organization and I/O Subsystems
   a. Basic Issues in Device Management
   b. The Abstract User Interface
   c. A Heirarchical Model
3. Accessing Procedures
   a. File Directories
   b. File Descriptors
   c. Access Control
   d. Opening and Closing Routines
4. Device Access Strategies
5. File Protection
6. IOCS

English Program

a. Overview

This program is designed for secondary school teachers of language arts and literature. The candidate for the degree might be an established teacher seeking a fuller development of his or her expertise.

b. Program Organization

Coordinator Dr. Kenneth Fifer

Advisors/Faculty [Vita are in Appendix B.]

Dr. Annette Benert
Dr. Kenneth Fifer
Dr. Lois Gadek
Dr. Daniel Ross

Program

Six courses will be offered on a regular basis, and a student would be required to take at least four, in addition to the final project. Each of the courses emphasizes the development of reading and writing skills for the students themselves as appropriate and for teaching of these skills at the secondary level.

The six courses would be offered on a three-year cycle, two each summer. In addition, there would be options for workshops and special topic seminars. All courses, workshops and seminars would be open to qualified students.

A student has six elective credits. With the approval of the student's advisor, the elective credits can be taken as workshops.

Every student must complete a three credit project. In addition there is a nine credit core requirement in professional education. The project can be taken as three one-credit courses. Total number of credits needed for graduation is thirty.

Courses

- EN 510 The Tragic Tradition
- EN 515 Critical Approaches to English Renaissance Literature

- EN 520 Critical Approaches to British Romantic and Victorian Literature
- EN 525 Critical Approaches to British Modern Literature
- EN 530 Critical Approaches to 19th Century American Literature
- EN 535 Critical Approaches to 20th Century American Literature
- EN 600 Project in English

Workshops

- A Process Approach to Teaching Writing
- Sentence Structure
- Computer-Assisted Writing
- The Research Paper

c. Course Descriptions

EN 510 The Tragic Tradition (3 Credits)

Studies of varying critical and pedagogical approaches to major works of tragic literature. Seminar environment emphasizes active participation by all class members.

N 515 Critical Approaches to English Renaissance Literature (3 Credits)

Studies of varying critical and pedagogical approaches to major works and major authors. Seminar environment emphasizes active participation by all class members.

EN 520 Critical Approaches to British Romantic and Victorian Literature (3 Credits)

Studies of varying critical and pedagogical approaches to major works and major authors. Seminar environment emphasizes active participation by all class members.

EN 525 Critical Approaches to British Modern Literature (3 Credits)

Studies of varying critical and pedagogical approaches to major works and major authors. Seminar environment emphasizes active participation by all class members.

EN 530 Critical Approaches to 19th Century American Literature (3 Credits)

Studies of varying critical and pedagogical approaches to major works and major authors. Seminar environment emphasizes active participation by all class members.

EN 535 Critical Approaches to 20th Century American Literature (3 Credits)

Studies of varying critical and pedagogical approaches to major works and major authors. Seminar environment emphasizes active participation by all class members.

EN 560-9 Writing Workshops in English (1-3 Credits)

Specialized workshops on the teaching of writing and the writing process.

EN 590 Special Topics: English (1-3 Credits)

Seminars offered periodically on topics of interest.

EN 600 Project: English* (1-3 Credits)

The terminal course in the English Program. Project to be designed by the student and the instructor. A total of three credits required for the Master of Education Degree in English. These credits may be taken one at a time. Prerequisite: Approval of advisor.

* Required course.

EN 510

CRITICAL STUDIES IN
THE TRAGIC TRADITION

A study of the tradition of tragedy in Western literature. The course will emphasize works of tragedy as well as the body of criticism which has attempted to define and describe tragedy. Other important concerns will include whether tragedy and Christianity are incompatible, whether tragedy is evident in multiple literary genres. Works to be examined will include Oedipus Rex and at least one other classical Greek tragedy, two Shakespeare tragedies, at least one novel and one other play, Artistotle's Poetics, and theories of tragedy from existentialist, thematic, and psychoanalytic perspectives.

"Instructor: Dr. Ross"

EN 515

CRITICAL APPROACHES TO ENGLISH
RENAISSANCE LITERATURE

A study of 16th and 17th Century English literature, in all genres, focussing on major writers such as Sidney, Spenser, Bacon, Marlowe, Webster, Donne, Sonson, Browne, Milton, and Shakespeare. The course will introduce and develop a variety of pertinent critical approaches to readings; these would typically include those Neo-Aristotlian, Deconstructive, Feminist, Marxist, Psychoanalytic, Textural, and New Historical perspectives, particularly useful to students and teachers of literature. General teaching strategies for these major writers will also be addressed. Students will be expected to speak, read, write, lead discussions, and deliver oral reports in a seminar environment.

"Instructor: Dr. Fifer"

EN 520

CRITICAL APPROACHES TO BRITISH
ROMANTIC AND VICTORIAN LITERATURE

A study of the major writers of 19th century British literature, tracing the effects of shifting political, philosophical, scientific, and economic factors on the writers of the Romantic and Victorian movements. Wordsworth, Coleridge, Byron, Shelley, and Keats will be studied as they reflect the resurgence of lyrical verse. Wordsworth and Coleridge will provide a basis for discussion of major critical theories. Pertinent critical readings on such Victorian writers as Dickens, Tennyson, Browning, the Brontes, and Hardy will be studied. Emphasis will be placed on how the art, architecture, and decorative arts reflect Victorian values and literature. Also, approaches to teaching literature of this period will be stressed. Participants will be expected to share responsibility for class discussions, do formal presentations, and write reports.

"Instuctor: Dr. Gadek"

EN 525

CRITICAL STUDIES IN
MODERN BRITISH LITERATURE

A study of some of the major authors of twentieth-century Britain, such as Conrad, Joyce, Lawrence, Woolf, Yeats, Auden, and Shaw. The course will emphasize a definition of modernism and an explanation of experimental methods used by modern British writers. In addition, students will discuss how modernist texts evolved from Romantic and Victorian perspectives and to what extent they incorporate or reject those perspectives. Where applicable, works may also be read in the context of the influence of such thinkers as Marx, Freud, and Nietzsche.

"Instructor: Dr. Ross"

EN 530

CRITICAL APPROACHES TO NINETEENTH CENTURY
AMERICAN LITERATURE

A study of the major writers of 19th century America. Focus will be on Romanticism and Transcendentalism. Readings from such writers as Poe, Hawthorne, and Melville will provide the basis for discussion of an emerging definition of fictional and critical theories. Such writers as Emerson, Thoreau, Whitman, Dickinson, and Twain will supplement and extend the course's content and provide various examples of the emerging literature of the United States. The effect of the Civil War, the Industrial Revolution, the settlement of the western frontier, and the growth of technology will be analyzed in terms of their impact on the century's literature. The development of a body of critical theory will be traced and then applied to the literature under discussion. Students will make several presentations, will write critical papers, and will prepare several short in-class reflections.

"Instructor: Dr. Gadek"

EN 535. CRITICAL APPROACHES TO 20TH CENTURY AMERICAN LITERATURE

Dr. Annette L. Benert **Summer 1989**
Associate Professor of English, Allentown College
Office: Dooling Hall 252; telephone 282-1100, ext 372

COURSE DESCRIPTION:

Intensive critical studies of important twentieth century American writers from several regions and ethnic groups. The course will explore a variety of contemporary approaches, formal, linguistic, historical, psychological, and sociological, to significant literary works. Class presentations will emphasize the larger cultural context of those works, with special attention to the role of the arts in American society. Projects will include analytical papers, library research, oral presentations, and the design of curricular materials appropriate to secondary school students. Seminar environment emphasizes active participation by all class members in all aspects of the course. (3 credits)

GOALS:

1. To appreciate the variety of twentieth century literary expression in twentieth century America
2. To understand the works of important American writers in new ways
3. To apply a variety of contemporary critical approaches to those works
4. To explore the relationship of those works to the surrounding culture, the other arts, dominant ideas, and political and social movements
5. To express the importance of these insights and relationships in oral, written and, when appropriate, visual forms
6. To develop curriculum materials for the teaching of literature at the secondary level making use of these insights and relationships

TEXTS (in the order in which they will be read):

Dreiser, Theodore. Sister Carrie [1900].
Wharton, Edith. The Age of Innocence [1920].
Williams, William Carlos. Selected Poems [1913-62].
Cather, Willa. My Antonia [1918].
Rolvaag, O. E. Giants in the Earth [1924].
Faulkner, William. Go Down, Moses [1941].
Walker, Margaret. Jubilee [1966].
Rich, Adrienne. Diving into the Wreck [1973].
Bradbury, Ray. Fahrenheit 451 [1953].
LeGuin, Ursula. The Wind's Twelve Quarters [1975].
Assorted readings on library reserve, as assigned.

ASSIGNMENTS:

Ten 1-page reading responses taking a specific critical approach
Two 3-4 page papers:
1. A formal analysis using a contemporary critical method
2. A contextual analysis drawing on history and culture

Two 15-minute workshop presentations:
1. A student writing assignment directed toward literary interpretation
2. A classroom activity directed toward other arts, events, ideas

A project developing a curriculum element, drawing on the whole course

EN 535. CRITICAL APPROACHES TO 20TH CENTURY AMERICAN LITERATURE

EVALUATION:
Attendance is expected at all classes and will be recorded. Whether present or not, students are responsible for all material covered and assigned. Late papers will be reduced 5% (one-half grade) per day up to a maximum of 20% (two grades) unless other specific arrangements have been made prior to the due date. Specific assignments and suggested topics for essays will be distributed two weeks before they are due. Grades will be accorded as follows:

10 reading responses @ 20 points each	200 points =	25%	A	= 90-100%
2 four-page essays @ 100 points each	200 points =	25%	B	= 80-89%
2 class presentations @ 100 points each	200 points =	25%	C+	= 75-79%
Final curriculum project	200 points =	25%	C	= 70-74%
TOTAL	**800 points =**	**100%**	D	= 60-69%
			F	= 0-59%

COURSE OUTLINE:

I. Introduction and Overview

Week 1. Assessment of individual and institutional needs
Assignment of two individual presentations on the role and relation of the other arts to one of the literary works
New techniques of bibliographical search
Survey of recent critical approaches

II. The Early Twentieth Century: Reclaiming the City

Week 2. Reading and discussion of Theodore Dreiser, Sister Carrie [1900]
Presentation on patterns of immigration, urbanization, commercial growth
The effect of social forces on the production and consumption of literature

Week 3. Reading and discussion Edith Wharton, The Age of Innocence [1920]
Reading and discussion of William Carlos Williams, Selected Poems [1913-62]
Presentation on American architecture and city planning
The role of the plastic arts in the Progressive movement
Paper 1 due: American culture and its literature

III. The 1910s and 1920s: Reclaiming the Land

Week 4. Reading and discussion of Willa Cather, My Antonia [1918]
Presentation on migration and settlement patterns
The tenacity of nostalgia in American culture

Week 5. Reading and discussion of O. E. Rolvaag, Giants in the Earth [1924]
Reading and discussion of William Carlos Williams, Selected Poems [1913-62]
Presentation on the evolution and ideology of American landscape painting
Narcissism and the American hero

EN 535. CRITICAL APPROACHES TO 20TH CENTURY AMERICAN LITERATURE

IV. The Mid-Twentieth Century: Reclaiming the Past

Week 6. Reading and discussion of William Faulkner, Go Down, Moses [1941]
Presentation on the function and definition of "history" in American culture
The American Adam, the new Eden, and the retreating frontier

Week 7. Reading and discussion of Margaret Walker, Jubilee [1966]
Reading and discussion of Adrienne Rich, Diving into the Wreck [1973]
Presentation on the role of black culture in American life
Race relations and the internalization of cultural norms
Paper 2 due: Ethnic culture and American fiction

V. The Late Twentieth Century: Reclaiming Myth

Week 8. Reading and discussion of Ray Bradbury, Fahrenheit 451 [1953]
Presentation on the role of fantasy in popular culture
Science fiction and faith in science; social science as social reform

Week 9. Reading and discussion of Ursula LeGuin, The Dispossessed [1976]
Reading and discussion of Adrienne Rich, Diving into the Wreck [1973]
Presentation on the arts as the re-visioning of society
Pluralistic democracy and the global village
Curriculum project due

Mathematics Program

a. Overview

The program enables the pre-college teacher to provide more effective instruction of students in mathematics and ensures that the pre-college teacher acquires the breadth and depth of mathematics appropriate for teaching grades 7-12. Teachers will receive training in the use of the microcomputer as an instructional tool and motivational device to clarify and enhance the teaching of mathematical concepts.

b. Program Organization

Coordinator Dr. Karen Doyle Walton

Faculty/Advisors [Vita are in Appendix B.]

Dr. Karen Doyle Walton
Mr. John Meinke

Program

The program consists of four mathematics courses, a project in mathematics, and four courses (nine credits) in the education core. The four mathematics courses will be offered on a three-year cycle. Elective courses and workshops will be available from the programs in Mathematics, Computer Science, and Computers in Education.

A student has six elective credits. With the approval of the student's advisor, the elective credits can be taken as workshops.

The total number of credits required for graduation is thirty.

Program Courses

- MA 510 Introductory Analysis
- MA 515 Mathematics for Educators
- MA 520 Advanced Euclidean Geometry
- MA 525 Probability and Statistics
- MA 600 Project: Mathematics*

Workshops

- Computers in High School Mathematics

Recommended Electives

CS 510	Computing for Teachers
CS 515	Problem Solving with Pascal
CE 510	LOGO
CE 515	Advanced BASIC for Teachers
CE 520	Authoring Languages and Systems
CE 550	Teaching Computer Science

c. Course Descriptions

MA 510 Introductory Analysis (3 Credits)

A study of the concepts generally included in high school calculus, covering the College Board AB and BC calculus curriculum. Emphasis is placed on the development of limit, derivative, and integral, including using the microcomputer to present these topics in the secondary school classroom.

MA 515 Mathematics for Educators (3 Credits)

Foundations of mathematics; sets, relations, and functions; algebraic structures; elementary number theory; kinds of infinity; and other topics related to the secondary school curricula.

MA 520 Advanced Euclidean Geometry (3 Credits)

A study of elementary Euclidean geometry from an advanced standpoint. An introduction to non-Euclidean geometries and computer applications to the study of Euclidean geometry will be included.

MA 525 Probability and Statistics (3 Credits)

Basic probability and statistics including independence and conditional probability, probability functions, normal curve, measures of central tendency and variability, correlation, binomial distribution, expected value, sampling and hypothesis testing, and confidence intervals. Computer applications to the study of probability and statistics will be included.

MA 560-9 **Workshops in Mathematics** (1-3 Credits)

Specialized workshops dealing with the application of educational technology in the educational environment.

MA 570 **Readings in Mathematics** (1-2 Credits)

An independent reading class for students with special needs. The reading list is to be developed by the student and instructor. Prerequisite: Graduate status. By arrangement with instructor.

MA 580 **Internship in Mathematics** (1-2 Credits)

A directed instructional project in which the student receives credit for conducting workshops, assisting in the teaching of courses, and/or working in an instructional laboratory. Prerequisite: Graduate status.

MA 590 **Special Topics: Mathematics** (1-3 Credits)

Course offered periodically on topics of special interest.

MA 600 **Project: Mathematics*** (1-3 Credits)

The terminal course in the Mathematics Program. A total of three credits is required for the Masters of Education Degree in Mathematics. These credits may be taken one at a time. Prerequisite: Approval of advisor.

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* Required Course.

Course Title: MA 510 Introductory Analysis

Credits: 3

Description: A study of the concepts generally included in high school calculus, covering the College Board AB and BC calculus curricula. Emphasis is placed on the development of limit, continuity, derivative, and integral, including using the microcomputer to present these topics in the secondary school classroom.

Text: Calculus With Analytic Geometry, John B. Fraleigh, Addison-Wesley Publishing Company., Reading, MA, 1986

Objectives:

1. To study the development of elementary functions, limit, continuity derivative, integral, sequences, and series.

2. To use the microcomputer to explain and illustrate elementary functions, limit, continuity, derivative, integral, sequences, and series.

3. To study computer applications to the study of rectangular coordinate and polar coordinate graphing.

4. To introduce or review the study of elementary differential equations.

5. To enable the student to teach effectively all subjects included in the College Board AB and BC calculus curricula.

Course Outline:

I. Elementary Functions
   - A. Properties of Functions
     1. Definition, domain, range
     2. Sum, product, quotient, and composition
     3. Absolute value, inverse, odd and even
     4. Periodicity
     5. Graphs, symmetry, zeros
     6. Polar functions and graphs
   - B. Properties of Particular Functions
     1. Trigonometric functions
     2. Trigonometric identities
   - C. Limits
     1. Delta-epsilon definition and graphic interpretation
     2. Properties of limits (e.g., limit of a sum, product)
   - D. Continuity
     1. Definition and graphic interpretation
     2. Continuity theorems

II. The Derivative
- A. Definition and Graphic Representation of the Derivative
- B. Derivatives of Elementary Functions
- C. Derivatives of Sum, Product, Quotient
- D. The Differential
- E. The Chain Rule
- F. Implicit and Logarithmic Differentiation
- G. High Order Derivatives
- H. Mean Value Theorem
- I. Relation Between Differentiability and Continuity
- J. L'Hospital's Rule

III. Applications of the Derivative
- A. Curve Sketching
- B. Extreme Value Problems
- C. Velocity and Acceleration
- D. Rates of Change
- E. Related Rates

IV. The Integral
- A. Antiderivatives
- B. Definition and Graphic Interpreation of the Integral
- C. Techniques of Integration
  1. Basic Formulas
  2. Substitution
  3. By Parts
  4. Partial Fractions
- D. The Fundamental Theorem

V. Applications of the Integral
- A. Areas Between Curves
- B. Volumes of Revolution
- C. Areas of Surfaces
- D. Integration of Polar Equations
- E. Arc Length
- F. Improper Integrals
- G. Moments and Mass

VI. Sequences
- A. Definitions of Sequence and Limit of Sequence
- B. Graphic Intepretation of Limit of Sequence

VII. Series
- A. Definitions of Convergence and Divergence
- B. Tests of Convergence
- C. Absolute and Conditional Convergence
- D. Alternating Series

VIII. Power Series
- A. Radius and Interval of Convergence
- B. Taylor Series and Polynominals
- C. Manipulation of Series

IX. Elementary Differential Equations

X. Vectors
   1. Graphing
   2. Algebra
   3. Lines and Planes

XI. Differential Calculus of Several Variables
   A. Partial Derivatives
   B. Graphic Representation
   C. Chain Rules
   D. Directional Derivatives

XII. Multiple Integrals
   A. Integrals Over Rectangular Regions
   B. Integrals Over More General Regions
   C. Integration in Polar, Cylindrical, and Spherical Coordinates
   D. Moments and Centers of Mass
   E. Surface Area

Software:

Brown, Austin R. and Mark, Harris. ARBPLOT. CONDUIT, The University of Iowa, Oakdale Campus, Iowa City, IA.

Detmer, R.C. and C.W. Smullen. Algebra Drill and Practice I & II., CONDUIT, The University of Iowa, Oakdale Campus, Iowa City, IA.

Dodge, Walter and Don Enns. Mathematics Software, Super Math Package. DCH Software, D.C. Heath and Company, Lexington, MA.

Dugdale, Sharon and David Kibbey. Graphing Equations. CONDUIT, The University of Iowa, Oakdale Campus, Iowa City, IA.

Kelly, John C. Discovery Learning in Trigonometry. CONDUIT, The University of Iowa, Oakdale Campus, Iowa City, IA.

Course Title: MA 515 Mathematics for Educators

Credits: 3

Description: Foundations of mathematics; sets, relations, and functions; algebraic structures; elementary number theory; kinds of infinity; and other topics related to the secondary school curricula.

Text: A Mathematics Sampler: Topics for the Liberal Arts, William P. Berlinghoff & Kerry E. Grant, Ardsley House Publishers, Inc., New York, 1988.

Objectives:

1. To introduce or reacquaint the student to topics from the broad spectrum of mathematics, old and new, pure and applied, traditional and unusual.

2. To address the question "What is Mathematics?".

3. To consider the historical perspective of mathematics.

4. To identify links between mathematics and other subjects.

5. To introduce or reacquaint the student to some topics included in most secondary mathematics curricula and some topics considered primarily as enrichment to the secondary mathematics curricula.

Course Outline:

I. What is Mathematics?
   - A. Problems and Solutions
   - B. Problem Solving
   - C. Pattern

II. A Brief History of Mathematics
   - A. From the Beginning to 600 B.C.
   - B. 600 B.C. to A.D. 400
   - C. A.D. 400 to 1400
   - D. The Fifteenth and Sixteenth Centuries
   - E. The Seventeenth Century
   - F. The Eighteenth Century
   - G. THe Nineteenth Century
   - H. The Twentieth Century

III. Basic Logic
   - A. Statements and Negations
   - B. Truth Tables and Logical Equivalence
   - C. Conjunctions and Disjunctions
   - D. Conditionals and Deduction

IV. Mathematics of Patterns: Number Theory
   - A. What is Number Theory?
   - B. Divisibility
   - C. Factorization
   - D. Perfect Numbers
   - E. Mersenne Numbers
   - F. Link: Number Theory and Cryptography

V. Mathematics of Form: Geometry
- A. What is Geometry?
- B. Euclidean Geometry
- C. Axioms Systems
- D. Mathematical Models
- E. Consistency and Independence of Axiom Systems
- F. Non-Euclidean Geometries
  1. History of Non-Euclidean Geometries
  2. Non-Euclidean Parallel Postulates
- G. Abstract Mathematics and the Real World
- H. Link: Geometry and Society

VI. Mathematics of Chance: Probability and Statistics
- A. The Origins of Probability and Statistics
- B. The Language of Sets
- C. What is Probability?
- D. Counting Processes
  1. Tree Diagrams
  2. Permutations
  3. Combinations
- E. Link: Counting and the Genetic Code
- F. Some Basic Rules of Probability
  1. Mutually Exclusive Events
  2. Independence
- G. Conditional Probabilty
- H. Link: Probability and Marketing
- I. What is Statistics?
- J. Basic Statistical Terms
- K. Generalization and Prediction
  1. Random Samples
  2. Law of Large Numbers
  3. Binomial Distribution
  4. Normal Curve
  5. Confidence Coefficient & Intervals
- L. Link: Statistics in the Psychology of Learning

VII. Mathematics of Machines: Microcomputers and Programming
- A. What Is a Computer?
- B. The Origins of Computers
- C. Computer Hardware Overview
- D. Some Basic BASIC
- E. Logic and Loops
- F. Graphics
- G. Link: Computer Simulation

VIII. Mathematics of Infinity: Cantor's Theory of Sets
- A. What is Set Theory?
- B. Infinite Sets
- C. Sets Equivalent to the Set of Natural Numbers
- D. Rationals and Irrationals
- E. Sets Equivalent to the Set of Real Numbers
- F. Cardinal Numbers
- G. Cantor's Theorem
- H. The Continuum Hypothesis
- I. The Foundations of Mathematics
  1. Logicism
  2. Intuitionism
  3. Formalism
- J. Link: Set Theory and Metaphysics

IX. Mathematics of Symmetry: Finite Groups
- A. What is Group Theory?
- B. Operations Defined on Sets
- C. Some Properties of Operations
- D. Definition of A Group
- E. Some Basic Properties of Groups
- F. Subgroups
- G. Lagrange's Theorem
- H. Groups of Symmetries

X. Mathematics of Space and TIme: Four-Dimensional Geometry
- A. What is Four-Dimensional Geometry?
- B. One-Dimensional Space
- C. Two-Dimensional Space
- D. Three-Dimensional Space
- E. Four-Dimensional Space
- F. Figures in Four-Dimensional Space
- G. Link: 4-Space in Fiction and Art

Additional Readings:

Abbott, Edwin A. Flatland, 5th Ed., Rev. New York: Barnes & Noble, Inc. 1969.

Bell, E.T. Men of Mathematics, New York: Simon and Schuster, Inc., 1937.

Dantzig, Tobias. Number, The Language of Science, 4th Ed. New York: Macmillan Publishing Co., Inc., 1954.

Eves, Howard. An Introduction to the History of Mathematics, 4th Ed. New York: Holt, Rinehart and Winston, 1976.

Gersting, Judith L., and Michael G. Gemignani. The Computer: Its History, Workings, Uses, and Limitations. New York: Ardsley House Publishers, 1988.

Goldstein, Herman. The Computer From Pascal to Von Neumann. Princeton, NJ: Princeton University Press, 1972.

Henderson, Linda Dalrymple. The Fourth Dimension and Non-Euclidean Geometry in Modern Art. Princeton, NJ: Princeton University Press, 1983.

Kline, Morris. Mathematical Thought from Ancient to Modern Times. New York: Oxford University Press, 1972.

Lieber, H.G., and L.R. Lieber. Non-Euclidean Geometry. Lancaseter, PA: The Science Press Printing Co., 1931.

Newman, James R. (ed.). The World of Mathematics, Vols. 1-4, New York: Simon & Schuster, Inc., 1956.

Prenowitz, Walter and Meyer Jordan. Basic Concepts of Geometry. Waltham, MA: Blaisdelle Publishing Co., 1965.

Software:

Walton, Karen D. and J. Doyle Walton. Probability; Actual Trials, Computer Simulations, and Mathematical Solutions. Reston, VA: National Council of Teachers of Mathematics, 1986.

Course Title: MA 520 Advanced Euclidean Geometry

Credits: 3

Description: A study of elementry Euclidean geometry from an advanced standpoint. An introduction to non-Euclidean geometries and computer applications to the study of Euclidean geometry will be included.

Text: Euclidean Geometry from an Advanced Standpoint, Edwin E. Moise, Addison-Wesley Publishing Company, Reading, MA, 2nd edition, 1974.

Objectives:

1. To examine elementary Euclidean geometry from a rigorous theoretical standpoint.

2. To review the process of the development of a postulational system.

3. To develop the student's knowledge and appreciation of proof.

4. To study the algebra of the real numbers using a rigorous postulational approach as a background for the study of Euclidean geometry.

5. To acquaint the student with the history and development of Euclidean and non-Euclidean geometries.

6. To study and prove the equivalencies of various forms of the Euclidean parallel postulate.

7. To acquaint the student with the techniques and conclusions of unmarked ruler and collapsible compass construction.

8. To enable the student to use the microcomputer as a tool to study Euclidean geometry.

Course Outline:

I. The Algebra of the Real Numbers
   - A. Postulational Approach to the Real Number Field
   - B. Ordering of the Real Numbers
   - C. The Principle of Mathematical Induction
   - D. The Integers and the Rational Numbers
   - E. The Archimedean Postulate and the Euclidean Completeness Postulate

II. Incidence Geometry in Planes and Space
   - A. Undefined Terms
   - B. Incidence Postulates and Theorems

III. Distance and Congruence
   - A. Functions and Relations
   - B. The Distance Function
   - C. Betweenness
   - D. Segments, Rays, Angles, and Triangles

IV. Separation in Planes and Space
- A. Convexity and Separation
- B. The Plane Separation Postulate
- C. Incidence Theorems Based on the Plane Separation Postulate
- D. Convex Quadrilaterals

V. Angular Measure
- A. Degree Measure for Angles
- B. Postulates and Theorems concerning Angles

VI. Congruence between Triangles
- A. The Definitions of Congruence for Segments, Angles, and Triangles
- B. Congruence Theorems for Triangles
- C. Use of Precise Terminology in Teaching Geometry
- D. Independence of the SAS Postulate
- E. Existence of Perpendiculars

VII. Geometric Inequalities
- A. Definitions Concerning Geometric Inequalities
- B. Theorems Concerning Geometric Inequalities

VIII. Introduction to the Geometric Supposer Software
(The Geometric Supposer will be used to illustrate various topics throughout the remainder of the course.)

IX. The Synthetic Approach to Euclidean Geometry: Congruence without Distance
- A. The Synthetic Postulates
- B. Laws of Inequality for Segments
- C. Synthetic Approach to Right Angles and the Triangle Inequality
- D. Differences between the Metric and Synthetic Approaches

X. Euclidean and Non-Euclidean Geometries
- A. The Euclidean Parallel Postulate
- B. The Lobachevskian Parallel Postulate and the Poincaré model for Lobachevskian Geometry
- C. The Riemannian Parallel Postulate and the Spherical Model for Riemannian Geometry

XI. Absolute Plane Geometry
- A. Sufficient conditions for Parallelism
- B. The Polygonal Inequality
- C. Saccheri Quadrilaterals and Theorems
- D. Historical Snapshot of Saccheri

XII. The Parallel Postulate and Parallel Projection
- A. The Uniqueness of Parallels
- B. Parallel Projections
- C. The Comparison Theorem
- D. The Basic Similarity Theorem

XIII. Similarities Between Triangles
- A. Proportionalities and Similarities between Triangles
- B. Triangle Similarity Theorems
- C. The Pythagorean Theorem

XIV. Polygonal Regions and Their Areas
- A. The Area Postulates
- B. Area Theorems for Triangles and Quadrilaterals
- C. Applications of Area Theory
  1. Proof of the Basic Similarity Theorem
  2. The Pythagorean Theorem

XV. Perpendicular Lines and Planes in Space
- A. Basic Theorems
- B. Parallel Lines and Planes in Space
- C. Angles between Planes: the Measure of a Dihedral Angle

XVI. Circles and Spheres
- A. Basic Definitions
- B. Secant and Tangent Lines
- C. Secant and Tangent Planes
- D. Area of Circles
- E. The Two-Circle Theorem
- F. The Triangle Theorem

XVII. Constructions with an Unmarked Ruler and Collapsible Compass
- A. Basic Constructions
- B. Algebra with Ruler and Compass

Software:

The Geometric Supposer

Course Title: MA 525 Probability and Statistics

Credits: 3

Description: Basic probability and statistics including independence and conditional probability, probability functions, normal curve, measures of central tendency and variability, correlation, binomial distribution, expected value, sampling and hypothesis testing, and confidence intervals. Computer applications to the study of probability and satistics will be included.

Text: Satistical Methods in Education and Psychology, 2nd ed., Gene V. Glass and Kenneth D. Hopkins. Prentice-Hall, Inc., Englewood Cliffs, NJ, 1984.

Objectives:

1. To acquaint the student with basic terms in probability and statistics.
2. To study elementary probability theory.
3. To introduce the student to descriptive and inferential statistics.
4. To enable the student to record and graph data in various ways.
5. To enable the student to interpret graphic representations of sets of data.
6. To study measures of central tendency and variability.
7. To acquaint the student with sampling theory and hypothesis testing.
8. To observe and interpret relationships between sets of data.
9. To use the computer to study probability and statistics.

Course Outline:

I. Introduction
   - A. Descriptive Statistics
   - B. Inferential Statistics

II. Variables, Measurement, and Scales
   - A. Continuous and Discrete Variables
   - B. Nominal, Ordinal, Ratio, and Interval Measurement

III. Frequency Distributions
   - A. Tabulation of Data
   - B. Graphed and Ungraphed Frequency Distributions
   - C. Graphing Distributions
     1. Histograms
     2. Frequency and Percentage Polygons
     3. Cumulative Distributions
     4. Box-and-Whisker Plots
     5. Stem-and-Leaf Displays
     6. Time-series Graphs
   - D. Percentile

IV. Measures of Central Tendency
- A. Sigma Notation
- B. Mode, Median, Mean
- C. Arithmetic Operations on Measures of Central Tendency
- D. Central Tendency and Skewness

V. Measure of Variability
- A. Range
- B. Deviation Scores
- C. Variance
- D. Standard Deviation
- E. Expected Value

VI. The Normal Distribution and Standard Scores
- A. History of the Normal Curve
- B. The Unit-Normal Distribution as a Standard: z-scores
- C. Areas Under the Normal Curve
- D. T-Scale
- E. Skewness and Kurtosis

VII. Correlation: The Measurement of Relationship
- A. Correlation Coefficients
- B. Scatterplots
- C. Linear and Curvilinear Relationships
- D. Pearson Product-Moment Correlation Coefficient
- E. Linear Transformations and Correlation
- F. Variance of A Sum
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- H. Additional Measures of Relationship (e.g., Spearman Rank Correlation)
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VIII. Linear and Multiple Regression
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- B. Error of Estimate
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- A. Brief History of Probability
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   D. One-Tailed and Two-Tailed Tests
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   F. The t-Distribution
   G. Confidence Intervals

XII. Inferences About the Differences Between Means
   A. Testing Statistical Hypotheses Involving Two Means
   B. Confidence Intervals About Mean Differences
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XIII. Inferences About Variances
   A. Chi-Square Distributions
   B. Inferences About the Population Variance
   C. Inferences About Two Variances

XIV. Inferences Regarding Proportions
   A. Variance, Standard Error, and Sampling Distribution of a Proportion
   B. Hypothesis Testing of Proportions

XV. Inferences Among Correlation Coefficient (if time permits)

XVI. One-Factor Analysis of Variance
   A. ANOVA Nomenclature and Computation
   B. Degress of Freedom

XVII. Two- and Three-Factor Analysis of Variance
   A. Interaction and Generalization
   B. Two- and Three-Factor ANOVA Computation
   C. Degrees of Freedom
   D. Interpretation of Two- and Three-Factor Interactions
   E. Confidence Intervals

XVIII. Introduction to Analysis of Covariance (if time permits)

Additional Resources:

SPSS-X Software

APPPENDIX B

FACULTY VITA[1]

NOTE: 1. Faculty committed to teaching in the program have been identified and their vita can be found on the following pages. The vita are in alphabetical order.

At the present time, the college is in the process of hiring four additional faculty members in departments that will be offering graduate programs. The selection of new faculty members is being done on the assumption that the proposed programs will be approved, and that the new faculty members will teach in the programs.

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[1] **Omitted from final report of project.**

APPENDIX C

SCHEDULE OF CLASSES
&
STAFFING MATRIX

NOTE: The scheduling of courses is based on the "best" guess on relative enrollments in the programs being proposed. Additional courses may be scheduled provide faculty are available and student enrollments warrants it.

SUMMER 1992

ED	502	Advanced Educational Psychology
ED	506	The School Curriculum
CE	525	Software Collection
CE	550	Teaching Computer Science
CE	515	Advanced BASIC for Educators
CH	530	Biochemistry for Teachers
CS	515	Problem Solving with Pascal
CS	525	Computer Concepts
EN	510	The Tragic Tradition
EN	535	Critical Approaches to 20th Century American Literature
MA	515	Mathematics for Educators
MA	525	Probability and Statistics

Plus at least six workshops

SUMMER 1993

ED	501	Introduction to Graduate Studies
ED	504	Philosophical and Sociological Aspects of Education
ED	508	Psychology of Adult Learners
CE	535	Microcomputer Systems
CE	520	Authoring Languages and Systems
CE	530	The Computer Curriculum and Other Issues
CH	510	General Chemistry for Teachers
CH	525	Physical Chemistry for Teachers
CS	510	Computing for Educators
EN	515	Critical Approaches to English Renaissance Literature
EN	520	Critical Approaches to British Romantic and Victorian Literature
MA	520	Advanced Euclidean Geometry
MA	510	Introductory Analysis

Plus at least six workshops

SCHEDULE OF CLASSES

SUMMER 1989

ED	501	Introduction to Graduate Studies
CE	525	Software Collections
CH	510	General Chemistry for Teachers
CS	510	Computing for Educators
EN	535	Critical Approaches to 20th Century American Literature
MA	510	Introductory Analysis

Plus at least six workshops

SUMMER 1990

ED	502	Advanced Educational Psychology
ED	506	The School Curriculum
CE	515	Advanced BASIC for Educators
CE	520	Authoring Languages and Systems
CE	530	The Computer Curriculum and Other Issues
CH	525	Physical Chemistry for Teachers
CS	515	Problem Solving with Pascal
CS	525	Computer Concepts
EN	515	Critical Approaches to English Renaissance Literature
EN	525	Critical Approaches to British Modern Literature
MA	510	Mathematics for Educators
MA	525	Probability and Statistics

Plus at least six workshops

SUMMER 1991

ED	501	Introduction to Graduate Research
ED	504	Philosophical and Sociological Aspects of Education
ED	508	Psychology of Adult Learners
CE	535	Microcomputer Systems
CE	510	LOGO
CH	515	Analytical Chemistry for Teachers
CH	520	Organic Chemistry for Teachers
CS	520	Advanced Programming Concepts
EN	530	Critical Approaches to Ninetenth Century American Literature
MA	520	Advanced Euclidean Geometry
MA	510	Introductory Analysis

Plus at least six workshops

STAFFING MATRIX

FACULTY	1989	1990	1991	1992	1993
EDUCATION					
Dr. McIntyre	ED 501		ED 501		ED 501
Dr. McGilvray		ED 502		ED 502	
Adjunct/New Hire		ED 506	ED 504	ED 506	ED 504
Adjunct/New Hire			ED 508		ED 508
COMPUTERS IN EDUCATION					
Dr. McIntyre	CE 525	CE 515	CE 535	CE 525	CE 535
		CE 520		CE 550	CE 520
Adjunct/New Hire		CE 530	CE 510	CE 515	CE 530
CHEMISTRY					
Dr. Berg	CH 510		CH 515		CH 510
Dr. Warren		CH 525			CH 525
Dr. Gadek			CH 520		
Adjunct/New Hire				CH 530	
COMPUTER SCIENCE					
Mr. Meinke	CS 510		CS 520		CS 510
Dr. Kreutzer		CS 515		CS 515	
Dr. Bede		CS 525		CS 525	
ENGLISH					
Dr. Fifer		EN 515			EN 515
Dr. Benert	EN 535			EN 535	
Dr. Gadek			EN 530		EN 520
Dr. Ross		EN 525		EN 510	
MATHEMATICS					
Dr. Walton	MA 510				
Mr. Meinke					
Adjunct/New Hire		MA 515	MA 520	MA 515	MA 520
Adjunct/New Hire		MA 525	MA 510	MA 525	MA 510

APPENDIX D

ENROLLMENT
&
COST ESTIMATES

ENROLLMENT AND COST ESTIMATES

The attached table shows the master's degree program budget projections for the first five years of the program. The model used is based on the assumptions presented below.

The sections are titled and numbered according to the categories on the attached spreadsheet.

1. Number of Students

The enrollment data is based on best guesses for the minimum number of students that might enroll, the most likely enrollment, and the maximum enrollment per program.

The minimum number, on average, was assumed to be five, and this number might increase at one per year for each of the first four years. The most likely estimate is that the average per program would be seven the first year, and this number would increase by two per year for two years, and one per year there after. The maximum enrollment would start out at ten per program and increase to twenty per program by year five.

2. Number of Programs

Five programs have been proposed for the first year, and at least one other program is being considered for year two. The model assumes another program will begin in year two and one more will begin in year three.

3. Credit-Hours Generated

The assumption is that each of the students enrolled will take nine credits. Most teachers will plan to complete the program in three years, but they will elect to take some course work or workshops during the school year. It is likely that individual teachers will take five or six credits per summer, but the courses will be open to teachers not enrolled in the degree program. The short-fall of the teachers working on degrees will be met by the non-degree students.

4. Tuition Income

The tuition income is based on the credit hours generated, taking into account a "cost of living increase" in tuition each year.

5. Federal Grant

This is the money that is allocated by the federal grant to those aspects of the grant which have a direct bearing on the masters degree program. This money will be available in 1988-89, and the grant might be renewed, but renewal is not part of the projected income. Renewal is not likely; the grant was for start-up funds.

It should be noted that without the grant funds, the proposed program would not have broken even during the first year even at maximum enrollments.

6. Tuition

After a review of tuitions charged at other competing institutions, the tuition for the program was set at two-hundred dollars per credit hour .

Most teachers will receive a partial refund of tuition from their districts, and all will receive some increase in salary when they complete the degree. The increase in salary may be in the range of one- to three-thousand dollars per year.

7. Tuition Increase

The assumption is an annual increase in tuition of four percent.

8. Total Income

Total income includes only tuition and the federal grant. Additional income is anticipated from room rentals and board. Preliminary surveys show that twenty percent of the students would use the dormitories.

9. Staff

- Director: The director of the program would be hired half-time for three months during the summer. Clearly the director would need to be actively involved with the program during the academic year, but the compensation is tied to the summer portion of his workload.

- Secretary: A half-time secretary is budgeted for three months.

- Faculty: Faculty salaries are based on fixed dollars per credit hour. The salary takes into account that faculty members will be teaching graduate level courses, and that the faculty members will be available for advisement. Some of the advisement will take place during the academic year, and the faculty member will not be directly compensated for this time. In order to insure a reasonable advisory load, no program will be permitted to enroll more than twenty students if it has less than two advisors.

It is assumed that salaries are not tied to individual class enrollments. During the start-up period, program courses can be expected to have less than ten students, but core courses will have significantly more students which will compensate for the small enrollments in non-core courses.

- Program Coordinators/Advisors: Program coordinators/advisors are allocated one thousand dollars for their work in developing the program courses, working on publicity and recruiting the initial students. The pay for some program coordinators has been included in the federal grant. This is a one-time-only expense, and it should compensate the program advisor for the fact that only one course will be offered in any one program the first summer it is initiated. In subsequent summers, enrollment will establish the number of course offerings.

- Fringe: Fringe benefits have been estimated at fifteen percent of salary.

10. Operating Expenses

- Supplies: Supplies have been been estimated at fifty dollars per course.

- Telephone: Telephone costs have estimated at two-hundred and fifty dollars per year.

- Printing and Postage: Printing and postage costs include development of admission materials and publicity.

- Survey: A telephone survey will be done to establish the needs of high schools within fifty miles of Center Valley.

- Evaluation Team: The Department of Public Education requires that we have a five member team visit the campus and evaluate the programs before the programs are approved.

11. Resources

- ERIC: The most significant resource need of the program will be the acquisition of the Education Resources Information Center (ERIC) system, which will be acquired over time. The proposal is to acquire the database software and the documents for the current year, and the immediate past year during 1989. Each year thereafter, the current year plus one past year will be acquired. This practice would continue until some source of outside funding can be found to acquire the remainder of the collection.

- Books/Periodicals: The library collection will be expanded in each of the program areas.

- Curriculum Materials: Curriculum materials will be updated on a regular basis, but there is a need to develop the primary collection during the first few years.

- Hardware: The initial cost of hardware, most of which will be in the Educational Technology Center, will be bought through the federal grant. On-going funds will be needed to insure maintenance and updating. Hardware purchased for the program will be made available to the entire college community during the academic year.

- Software: The continued development of the software collection will be a requirement of the project.

12. Total Expenditures

The total expenses during the first year are higher because of the need to equip the center, but these funds are coming from the grant.

13. Number of Courses

The number of courses offered each year will depend on the growth of the programs. The core courses are set for the first three years, as are the program courses. A minimum of one program course will be offered each summer for each program; this course would not be subject to enrollment. The commitment of the College to a second program course per summer will need to be negotiated. If and when the enrollment in a program reaches ten students, the number of program courses would probably be increased to two per summer.

14. Annual Salary Increase

The fiscal model includes a five percent salary increase each year.

15. Salary/Credit Hour

The fiscal model has as its salary base one thousand dollars per credit hour. This is the salary that would be paid to any regular full-time faculty member. Should adjunct professors from other institutions be hired as teachers, their salaries will be negotiated. The model, as presented, assumes all instructors are regular faculty members.

16. Net Revenue

The net revenue from the program shows a gradual increase over time at all levels of enrollment.

MASTER DEGREE BUDGET PROJECTIONS

Summer	1989	1990	1991	1992	1993
1. Number of Students					
Minimum	25	42	56	64	64
Most Likely	35	63	88	96	104
Maximum	50	84	120	136	160
2. Number of Programs	5	7	8	8	8
3. Credit Hours Generated					
Minimum	225	378	504	576	576
Most Likely	315	567	792	864	936
Maximum	450	756	1080	1224	1440
4. Tuition Income					
Minimum	45,000	79,380	111,132	133,358	140,026
Most Likely	63,000	119,070	174,636	200,038	227,543
Maximum	90,000	158,760	238,140	283,387	350,066
5. Federal Grant	59,625	0	0	0	0
6. Tuition/Credit Hour	200	210	221	232	243
7. Annual Tuition Increase	0.05				
8. TOTAL INCOME					
Minimum	104,625	79,380	111,132	133,358	140,026
Most Likely	122,625	119,070	174,636	200,038	227,543
Maximum	149,625	158,760	238,140	283,387	350,066

9. Staff					
Director	5,500	5,775	6,064	6,367	6,685
Secretary	750	788	827	868	912
Faculty	18,000	34,650	39,690	45,147	51,051
Coordinators	5,000	2,000	1,000	0	0
Fringe	4,388	6,482	7,137	7,857	8,797
10. Operating Expenses					
Supplies	300	550	600	650	700
Telephone	500	500	500	500	500
Printing	5,000	4,000	3,000	2,500	2,500
Postage	1,000	1,000	1,000	1,000	1,000
Marketing Survey	2,000				
Evaluation Team	2,500				
11. Resources					
ERIC	10,000	6,000	6,000	6,000	6,000
Books/Periodicals	5,000	5,000	5,000	5,000	5,000
Curriculum Materials	3,500	2,500	1,500	500	500
Hardware	36,000	9,000	9,000	9,000	9,000
Software	9,000	4,500	4,500	4,500	4,500
12. TOTAL EXPENDITURES	98,438	76,744	79,818	83,890	91,145
13. Number of Courses	6	11	12	13	14
14. Salary/Credit Hour	1,000	1,050	1,103	1,158	1,216
15. Annual Salary Increases	0.05				
16. NET REVENUES					
Minimum	6,188	2,636	31,314	49,468	48,881
Most Likely	24,188	42,326	94,818	116,148	136,397
Maximum	51,188	82,016	158,322	199,497	258,920

APPENDIX C

GRADUATE BULLETIN

Allentown College of Saint Francis de Sales

GRADUATE BULLETIN

1989-90

Allentown College of Saint Francis de Sales

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Allentown College of Saint Francis de Sales

NOTICE OF NONDISCRIMINATION

Allentown College of St. Francis de Sales will accept and make available to all students, faculty members, or employees on a nondiscriminatory basis, without regard to age, sex, race, color, handicap, or national and ethnic origin, all the rights, privileges, programs, and activities generally accorded or made available to students, faculty members, and employees. Allentown College of St. Francis de Sales does not discriminate on the basis of age, sex, race, color, handicap, or national and ethnic origin in the administration of its educational policies, admission policies, scholarship and loan programs, and athletic and other school-administered programs.

It is the policy of Allentown College of St. Francis de Sales not to discriminate on the basis of sex in its activities or employment policies as required by Title IX of the 1972 Education Amendments. Inquiries regarding compliance with Title IX may be directed to the Affirmative Action Coordinator, Allentown College of St. Francis de Sales, Center Valley, PA, 18034, phone (215)-282-1100 or to the Director of the Office of Civil Rights, Department of Health and Human Services, Washington, D.C.

Allentown College of Saint Francis de Sales reserves the right to make all necessary changes in this bulletin without prior notice. This bulletin should not be considered a contract.

HISTORY

On January 28, 1961, His Excellency, the Most Reverend Joseph McShea was appointed Bishop of the Allentown Diocese by His Holiness Pope John XXIII. This diocese is composed of the five counties in northeast Pennsylvania, namely, Berks, Carbon, Lehigh, Northampton, and Schuylkill. One of the first actions of Bishop McShea was to make a study of the educational facilities of the Diocese. Since this Diocese had been split off from the Archdiocese of Philadelphia, it already possessed a well-organized elementary and high school educational system. It was evident, however, that the system needed to be enlarged. Bishop McShea announced that there would be a drive to obtain funds for the expansion of the high school system; and at the same time he called attention to the fact that there was no Catholic college for men in the Diocese. At the request of the Bishop, the Oblates of St. Francis de Sales agreed to assume responsibility for establishing a liberal arts college to serve this need.

Planning for the new college began in April, 1962, and the charter for Allentown College of Saint Francis de Sales, with full power to award the Bachelor of Arts and Bachelor of Science degrees, was granted by the Commonwealth of Pennsylvania on May 27, 1964. Classes began for freshmen in September, 1965. Allentown College was fully accredited by the Middle States Association of Colleges and Schools during the 1969-70 academic year. In September, 1970, the College became a coeducational institution. The Master of Science in Nursing was introduced in the Fall of 1984, the Master of Science in Management Information Systems was introduced in the Fall of 1988, and in the Summer of 1989 five Master of Education degrees were introduced in the areas of Chemistry, Computers in Education, Computer Science, English, and Mathematics.

Accreditation

Allentown College of Saint Francis de Sales is fully accredited by the Middle States Association of Colleges and Schools and approved by the Pennsylvania Department of Education. Documentation decribing these various accreditations and approvals are available for review upon request to the office of Academic Affairs.

Allentown College of Saint Francis de Sales

GENERAL INFORMATION

Mission Statement

It is the mission of Allentown College of College of St. Francis de Sales to provide men and women with a liberal education in the Catholic and Salesian traditions, emphasizing academic excellence, individual attention, a community experience, mutual concern, and preparation for careers. Our purpose is to enable students to become Christian humanists, that is, to become fully human in a Christian way. Through selected graduate programs, the College seeks to extend this mission to specialized study and continued personal development.

Philosophy

Allentown College of St. Francis de Sales is a Catholic liberal arts college established by the Oblates of St. Francis de Sales to share the benefits of higher learning with qualified students to enable them to enjoy and to contribute to the achievements of civilization. As a Catholic institution, Allentown College seeks to relate all that is truly human to the good news of salvation.

Allentown College describes the Christian humanist as a fully-developed person capable of and disposed to relating the light of the Gospel to the rich variety of the world. Full human development extends to all aspects of the person, that is, physical, intellectual, moral, social, aesthetic, and religious. The world in all its variety includes the natural environment, social institutions, human history, and cultural achievement. The Gospel brings light to all of these aspects of human experience and makes a fully meaningful existence possible. Allentown College strives to make its students aware of what it means to be Christian in a Salesian way, to direct one's life, and to bring the good news to the human family.

Allentown College is firmly and publicly committed to the principles of Catholic doctrine and morality. It also fully recognizes that the search for truth requires an atmosphere of intellectual freedom and that love demands an openness to all that is good. Allentown College distinguishes carefully between the free pursuit of truth, which it guarantees every member of the campus community, and its own commitment to the teaching of the Catholic Church.

Objectives for Graduate Education

Allentown College specifies that its graduate programs strive to enable its students:

1. To develop specialized competence in a field of study so that graduates might provide leadership and make significant contributions to their fields;

2. To develop the skills necessary for advanced research in their specialized fields; and

3. To enhance the formation of a Christian conscience as it applies to the ethical problems of their fields of interest.

ACADEMIC REGULATIONS

General Information

1. Master level courses are numbered 500 and above. No lower level undergraduate course may be applied toward a graduate degree. Graduate courses are excluded from the College's Credit by Examination program.

2. Transfer credit for a maximum of two graduate three-credit courses may be accepted, subject to validation by the program director. Transfer credit will not be accepted for courses in which a grade lower than B has been received.

3. Matriculated students must have prior written approval from the program director for courses to be taken at other institutions.

4. Students who wish to interrupt their education may petition the director of the program. The petition should contain the reasons for requesting a leave of absence and an estimate of its duration, which cannot be longer than two calendar years.

5. The maximum time for completion of a master's degree is seven years from the date of enrollment in the first course (including any leaves of absence).

6. A student who does not take a course within a twelve-month period will be considered withdrawn from the program. The student must re-apply for admission and pay the appropriate fee.

Grading System

The following system of grades is used:

Grade	Quality Points	Description
A	4.0	Indicates mastery of the course content accompanied by evidence of exceptional achievement in critical, independent, and creative thought competently expressed.
B	3.0	Indicates a good grasp of the course content accompanied by evidence of marked achievement in critical, independent, and creative thought competently expressed.
C	2.0	Indicates a minimal grasp of the course content accompanied by evidence of minimum achievement in critical, independent, and creative thought and the capacity to express it.

F	0.0	Indicates an insufficient grasp of the course content accompanied by evidence of an unacceptable low level of achievement in critical, independent, and creative thought competently expressed.
I		Incomplete. The maximum time limit for the make-up of an incomplete grade is two months after the last class day of the course. It is the responsibility of the student to make satisfactory arrangements with the course instructor for completion of course requirements.
W		Official withdrawal, allowed no later than the date indicated on the calendar of the graduate program.
WP		Official withdrawal, passing at time of withdrawal.
WF		Official withdrawal, failing at time of withdrawal.

Quality Point Index (Q.P.I.)

The quality points per course are determined by multiplying the number of semester hours (1, 2, 3, etc.) by the number of quality points assigned to the grade received (A = 4.0, B = 3.0, C = 2.0, F = 0.0).

Retention, Probation, and Dismissal

A cumulative quality point index of 3.0 or above is required for acceptable academic standing in the master's programs and is required for graduation. A student whose cumulative Q.P.I. falls below 3.0, will be placed on probation and must meet with his or her advisor to develop a plan of study. Students who do not have a Q.P.I. of 3.0 at the completion of eight courses or 24 credits are liable to dismissal.

A student with a cumulative Q.P.I. of less than 2.0 must withdraw from the program.

Course Withdrawal Policy

A student is permitted to withdraw from any course without permission prior to the third class meeting. In the event of such withdrawal, the course is not listed on the student's permanent record.

Subsequent withdrawal (withdrawal with permission) requires the approval of the student's advisor and the director of the program. Students who withdraw with permission during the first half of a course will be given a grade of W, WP, or WF at the instructor's discretion. The grade given in such instances will become part of the student's permanent record but will not be used in the computation of the quality point index (see above). Withdrawal beyond the time specified above results in a failure (F) in all cases except those exempted by the Admission and Academic Policies Committee as a result of student appeal.

Withdrawal from the Graduate Program

In order to withdraw from the graduate program, the student must

1. Resolve all financial indebtedness to Allentown College.
2. Complete a program withdrawal form available from the program director. The date of the filing of the official withdrawal form is considered to be the date of withdrawal in all cases.

Refund on Withdrawal

A refund of tuition payments will be made to a student who withdraws in good standing from Allentown College. In all cases, credits will be calculated from the date the student completed the official withdrawal form, and the rebate will be based on the amount of time the student has spent at Allentown College as indicated on the calendars of the individual programs.

Refunds apply to tuition only; no appendant fees or other charges are refundable. If a student is allowed to enroll by use of the deferred payment procedure due to a student loan currently in process, or an employer tuition payment plan, any funds due the College are immediately due and payable upon withdrawal.

Graduation

It is the student's responsibility to apply for graduation at the Registrar's Office no later than March 1 if he/she intends to graduate in May or October 1 if he/she intends to graduate in January.

Transcripts

A fee will be charged for each transcript of credits after the first. Transcripts of credits will not be issued unless all financial obligations have been discharged.

Allentown College of Saint Francis de Sales

INSTRUCTIONAL RESOURCES

Library

Since January 1988, the College's library collection has been housed in the new Trexler Library. The spacious, functionally-designed information center accommodates more then 118,000 volumes.

The periodical collection of over 850 titles is augmented by an extensive collection of standard periodical indexes and reference and bibliographic collections appropriate to the College's curricula. Library resources can be accessed through traditional indexes and catalogs or state-of-the-art computer systems.

The library collection of the Lehigh Valley Association of Independent Colleges (Lehigh, Lafayette, Muhlenberg, Moravian, and Cedar Crest), a collection of almost one million volumes, is available to Allentown College students through interlibrary loans and a daily courier service.

The library is a member of the Pennsylvania Library Network (PALINET) and the On-line Computer Library Center (OCLC). Interlibrary loans can be requested from libraries throughout the world.

Educational Technology Center

In 1988, Allentown College of St. Francis de Sales received a grant from the U. S. Department of Education to establish a Center for Excellence in Mathematics, Science, and Computer Learning. The resources and services of the Center are available to all students of the College and to teachers from the surrounding area.

The Center provides access to the following:

- Microcomputers (Apple, Tandy, Macintosh, LaserComputer)
- Software Collections (Apple, Macintosh, MS-DOS)
- Informational Data Bases (ERIC, Medline)
- Interactive Video (IBM and Macintosh)
- Adaptive Hardware for the Handicapped (Firmware Card, Unicorn Board, Speech Synthesizer, etc.)
- Curriculum Materials (Textbooks, teacher guides, laboratory kits, manipulatives, video tapes, filmstrips, etc.)
- Public Domain Collections (Apple, Macintosh, and IBM)
- Desktop Publishing (Macintosh, LaserWriter, HP-Scanner, Page maker, etc.)

The Center is located in the Trexler Library and is open approximately sixty hours per week.

Academic Computing Center

Allentown College maintains a well-equipped Academic Computing Center for use in research and course work. The mainframe is a VAX 11-750, manufactured by Digital Equipment Corporation and operating under the UNIX operating system. In addition, appropriate microcomputer facilities comprising IBM PC and IBM PC compatibles with an extensive software library are available for both the faculty and students. Plans are underway to upgrade the mainframe and to expand the microcomputer laboratory with the acquisition of IBM PS/2 processors.

The Academic Computing Center provides a variety of services for the College community. The Director of the Center, members of the Computer Science Department, and consultants are available to help users with programming and other related problems.

The use of computers is strongly encouraged in all courses offered at the College. There is no extra charge for the use of the facilities.

Student Services

The facilities of the Health Services are available to students in the graduate programs as are the resources of the Offices of Career Planning and the Campus Ministry. Descriptions of these services are provided in the undergraduate Bulletin of Information.

Allentown College of Saint Francis de Sales

MASTER OF SCIENCE IN NURSING PROGRAMS

Dr. Joan F. Grindley, Director
Department of Nursing
215-282-1100, ext. 1271

The Department of Nursing at Allentown College of St. Francis de Sales offers a program in advanced nursing leading to the Master of Science in Nursing degree with a focus on Adult Health Care. Each student has the option to specialize in medical-surgical, critical care, or community health nursing and to pursue particular interests within the specialty area selected. In addition, each student chooses a functional area of study in administration, education, or clinical specialization.

Learning experiences are designed to develop the knowledge, understanding, and skills which define the accountable nursing specialist. The graduate program builds on the undergraduate major, expanding the knowledge base in nursing and in general education and allowing for the refinement of concepts and skills previously learned. An M.S.N. graduate is able to function as a collaborative colleague in health care planning, policy decision-making, and implementing and directing care.

The Master of Science in Nursing Program is designed to provide both the theoretical and practical learning experiences which assist the student in fulfilling the purposes and objectives of the program as well as personal objectives. The program of studies reflects the philosophy of the Department of Nursing. The program objectives emanate from the statement of beliefs concerning man in today's society, the relationship of nurse to client, and the responsibilities of the nurse to the delivery of health care for today and the future.

The program requires completion of a minimum of 45 credits. Approval of the faculty advisor and appropriate background courses are prerequisite for registration for all courses. Twenty-four semester hours are required in core courses. A minimum of six semester hours is required in the student's clinical specialization. Nine additional hours are required in a functional area of the student's choice.

Selected courses are offered by various academic departments as electives for students in the graduate program. These elective courses are designed to meet specific learning needs of professional people.

Admission Requirements

Normal requirements for admission into the Master of Science in Nursing Program are:

1. A baccalaureate degree in nursing from an accredited instituttion.
2. A minimum of one year's experience as a practicing nurse within the past five years.
3. Evidence of having completed a physical assessment course or its equivalent.
4. Evidence of having completed a basic statistics course.

Application Procedure

Applicants for admission may obtain the necessary forms from the Department of Nursing. A complete application includes:

1. A completed application form, including a short statement of professional goals.
2. A non-refundable application fee (see below).
3. Official transcripts of work done in all undergraduate and graduate schools attended.
4. An official copy of the results of the Miller Analogies Test taken within the past five years.
5. Three letters of reference, one each from the Dean or Chair of the applicant's undergraduate nursing program, the present employer, and a person who has known the applicant in a professional capacity.

All applicants are expected to have an interview with a member of the Committee on Admissions and Academic Standards Committee before final action is taken on the application.

A student who is undecided about seeking admission to the graduate program in Nursing is permitted to enroll in only one course without first completing all the admission requirements. If the student decides to seek admission, then all of the admission requirements must be completed before the student enrolls in any subsequent courses. The student who is in the process of making application may take only one course before the process is completed. Exceptions must be requested in writing by the student and are granted or denied by the Committee on Admission and Academic Policies.

Registered nurse graduates of non-accredited baccalaureate nursing programs must follow the procedure as stated above, except that admission will be provisional. After a student has completed twelve graduate credits with a cumulative quality point index of 3.0 or better, he/she will be removed from provisional status. As soon as the student is placed on regular status, the student may apply for matriculation.

Related Policies

Registered nurse graduates of non-nursing baccalaureate programs will be provided with guidelines for developing a Portfolio of Prior Learning. The portfolio will be evaluated to determine if the applicant has met the objectives identified by the National League for Nursing for graduates of baccalaureate nursing programs. Acceptance will be determined by the Committee on Admissions and Academic Standards.

Registration

Registration for classes usually follows the College's semester academic calendar. Registration materials are available in the Department of Nursing. All graduate students must consult with their advisors prior to registration.

Registration may be done anytime up to the first day of class, but the College reserves the right to limit enrollment or to cancel a class if enrollment is not sufficient.

A full-time student is one who carries nine to twelve semester hours for credit in any given semester.

A part-time student is one who carries fewer than nine semester hours credit in any given semester.

Transfer Policy

The maximum number of credits that can be transferred into the program is six. All requests for transfer of credits must be made through the student's advisor and approved by the program director. Students will be expected to provide documentation for course work.

Transfer of credit will be allowed for grades of B or better.

Matriculation

After completing at least twelve graduate credits with a cumulative Q.P.I. of 3.0 or better, a student is eligible to apply for matriculation and to be granted candidacy status. Application is made in writing to the program director and should be accompanied by a transcript of courses completed.

Degree Requirements

The following are graduation requirements:

1. Completion of not less than forty-five credits of approved graduate study.
2. An overall quality point index (Q.P.I) of 3.0 for all coursework related to the degree taken at Allentown College.
3. Resolution of incomplete grades.
4. Completion of approved research project.

Academic Schedule

The Master of Science in Nursing Program is designed for nurses wishing to engage in either full- or part-time study. Courses are offered during the fall and spring semesters and during a summer session. Scheduling of courses is planned to meet the needs of nurses who are full-time employees. The majority of courses are offered in the evening.

Expenses

Tuition (per semester hour)	$235.00
Application Fee (new students)	25.00
Science Lab Fee*	65.00
Graduation Fee	70.00
Late Registration Fee	25.00
Change of Roster Fee	10.00
Returned Check Service Fee	10.00
Readmission Fee	25.00

*Where applicable

Withdrawal and Refund

For students in a fifteen-week session, the refund on withdrawal policy is as follows:

Withdrawal in 1st or 2nd week:	80% of tuition refunded
Withdrawal in 3rd or 4th week:	50% of tuition refunded
Withdrawal in 5th or 6th week:	25% of tuition refunded
Withdrawal after 6th week:	NO REFUND

Calendar
Master of Science in Nursing Program

Fall Semester, 1989

August 31	Thursday	Classes begin.
September 4	Monday	Labor Day Holiday
September 6	Wednesday	Opening Mass of the Holy Spirit
September 14	Thursday	Last day for applying to challenge a course by examination. Last day for changing or adding courses.
October 16	Monday	Last day for submitting applications for winter graduation.
October 23	Monday	Last day for withdrawal from course with W, WP or WF.
November 6-10	Mon. - Fri.	Consultation with advisor for preregistration.
November 13, 15, 17, 20		Preregistration. (deposit required).
November 21	Tuesday	Thanksgiving Liturgy
November 22	Wednesday	Thanksgiving recess begins after last class.
December 13	Wednesday	Last class day.
December 14, 15, 16, 18		Final Examinations.

Spring Semester, 1990

January 16	Tuesday	Classes begin.
January 23	Tuesday	Last day for changing or adding courses.
January 28	Sunday	Winter Graduation.
January 31	Tuesday	Last day for applying to challenge a course by examination.
March 1	Tuesday	Last day for submitting applications for May graduation.
March 9	Friday	Last day for withdrawal from course with W, WP or WF. Spring recess begins after last class.
March 19	Monday	Classes resume
April 9-12	Mon. - Fri.	Consultation with advisor for preregistration.
April 12	Thursday	Easter recess begins after last class.
April 17	Tuesday	Classes resume.
April 18, 20 & 23		Preregistration. (deposit required).
May 4	Friday	Last class day.
May 7	Monday	Semester examinations begin.
May 12	Saturday	Last day of Spring Semester.
May 20	Sunday	Baccalaureate and Commencement.

Course Descriptions

BI 501 Clinical Physiology I (3 credits) **Biology**

Course designed to enhance the knowledge and understanding of the basic physiological principles necessary to the delivery of professional nursing care. Emphasis is on homeostatic mechanisms which preserve the integrity of the individual.

BI 502 Clinical Physiology II (3 credits)

Course designed to enhance the knowledge and understanding of the basic physiological principles necessary to the delivery of professional nursing care. Special emphasis is given to the leading causes of disease among citizens of this nation. Prerequisite: BI 501.

NU 501 Proseminar (3 credits) **Nursing**

Focuses on the importance of research in the development of nursing science with emphasis on analysis of research methods and designs for use in nursing research. Includes identification of research problems and development of research designs.

NU 502 Advanced Nursing (3 credits)

Theory course which develops a foundation of core concepts relevant to advanced practice for the beginning graduate student. Levine's nursing goals to foster adaptation and to promote wholeness are used by the practitioner to build an individual basis for advanced practice. Prerequisite: NU 503.

NU 503 Nursing Theory and Models (3 credits)

Theory course which examines the various nursing models and the continual development of nursing theory. An in-depth exploration of Levine's model is used as a basis for nursing practice.

NU 504 Research Seminar (3 credits)

Assists the student in development of the skills necessary for scientific inquiry. Students prepare a preliminary research proposal which may serve as a basis for the Master's research. Prerequisite: NU 501.

NU 506 Medical-Surgical Nursing I (3 credits)

Clinical course focusing on problems resulting from the client's inability to foster adaptation and promote wholeness. Nursing intervention based on Levine's Conservation Principles will be examined, applied, and evaluated. Prerequisites: BI 501, BI 502 (or concurrent with BI 502), NU 502.

NU 507 Medical-Surgical Nursing II (3 credits)

Clinical course which emphasizes use of the scientific process to validate biopsychosocial and spiritual principles in the care of a selected group of patients. Prerequisite: NU 506.

NU 508 Community Health Nursing I (3 credits)

Clinical course which focuses on clinical knowledge commensurate with advanced practice when providing care for clients in the community using Levine's Conceptual Model. Investigates current trends, concepts, and practices in the community affecting community health nursing practice. Prerequisites: BI 501, BI 502 (or concurrent with BI 502), NU 502.

NU 509 Community Health Nursing II (3 credits)

A clinical course which strengthens nurses' expertise in the broad concepts of health promotion and illness prevention with aggregate groups at the community level. Prerequisite: NU 508.

NU 601 Christian Social Principles (3 credits)

Analyzes the impact of Christian social principles relative to current health care including political awareness of health issues.

NU 605 Research Guidance (3 credits)

Completion of the study of an identified research problem under the aegis of a selected advisor.

Courses in Functional Area of Practice

Prerequisite to any of these courses are the following:

BI 501, NU 501 or 503, NU 502

These courses will be offered whenever five or more students require the course.

Education

ED 611 Education I (3 credits)

Education concepts and theories and their relationship to Nursing and health education are investigated.

ED 612 Education II (3 credits)

Curriculum development and teaching strategies which apply to nursing and health education are analyzed. Prerequisite: ED 611.

NU 618 Nursing Education Practicum (3 credits)

Practical application of curriculum and evaluation in an educational setting. Prerequisite: ED 612 (or concurrent with ED 612).

Management

MG 611 Administrative Management (3 credits)

Addresses principles of management, organization design, and the influence of various environmental factors on both the organization and the individual.

MG 612 Operations Management (3 credits)

Decision making and analyses of routine and major management problems that arise in the operations functions of an organization are analyzed. Prerequisite: MG 611.

NU 616 Nursing Administration Practicum (3 credits)

Focuses on practical application of principles and theory of administration of nursing services in acute care and community settings. Prerequisite: MG 612 (or concurrent with MG 612).

Clinical Specialization

NU 611 Clinical Nurse Specialist I (3 credits)

An examination of the clinical specialist role components. Practitioner, teacher, consultant, change agent, and researcher roles are studied in relation to their application to advanced nursing practice. Prerequisite: NU 506 or NU 508. (Offered annually)

NU 612 Clinical Nurse Specialist II (3 credits)

Exploration of the various strategies and issues integral to role implementation. Prerequisite: NU 611.

NU 614 Clinical Nurse Specialist Practicum (3 credits)

Implementation of the role in a clinical setting. Prerequisite: NU 612 (or concurrent with NU 612).

Elective Courses

ED 501 Sociology of Education (3 credits)

A sociological approach to the significance of current public issues upon educational efforts.

NU 515 Planning for Health (3 credits)

Students will critically investigate the meaning of health and creatively design health strategies for varying populations of clients. Students will address major issues and possible solutions to health care problems. Prerequisites: none.

NU 619 Finance for the Non-financial Manager (3 credits)

Emphasizes the integration of concepts of finance and those of nursing management. Focus is on charges and reimbursement, budget development, costing out nursing care, variance analysis, capital budget, and cash flow.

PO 501 The Legislative Process and Health Care Policy (3 credits)

A policy analysis approach to major issues in American health care. Particular emphasis is placed upon financial and ethical issues.

PS 501 Health Psychology (3 credits)

Introduction to the application of psychological and educational principles to the maintenance and restoration of health by affecting health-related behaviors.

TH 501 Current Problems in Medical Ethics (3 credits)

An examination of current issues in health care from an ethical perspective.

Allentown College of Saint Francis de Sales

MASTER OF EDUCATION PROGRAMS

Dr. Pat McIntyre, Director
Department of Education
215-282-1100, ext. 1401

The Department of Education at Allentown College of St. Francis de Sales coordinates five Master of Education degree programs: Chemistry, Computers in Education, Computer Science, English, and Mathematics. The programs were designed for teachers in the basic education community, and they strongly emphasize their academic disciplines.

The Education Department provides the common core of courses for the programs. The core courses teach certain basic academic skills and perspectives to insure that all students have a firm basis for making decisions about curriculum and instruction. There is no degree in professional education. Degrees are only offered in the academic disciplines.

Workshops, seminars, and internships are offered by the Education Department and may be taken as general electives in the degree programs with the approval of the student's advisor, but they are not available as substitutes for the core courses. The maximum number of elective credits for a graduate student is six. With the approval of the student's advisor, the elective credits can be taken as workshops.

Admission Requirements

Normal requirements for admission into the Master of Education program are:

1. A baccalaureate degree from an accredited institution.
2. Completion of a teacher certification program acceptable to the Commonwealth of Pennsylvania.
3. At least one year of work experience relevant to the field of Education.

Individuals with special needs or goals may submit applications for the program. Acceptance into the program will be the responsibility of the Admissions and Academic Policies Committee of the Master of Education Program.

Application Procedure

Applicants for admission to a program can obtain the necessary forms and information from the program director or the individual program coordinators.

A complete application will include:

1. A completed application form, including a short statement of professional goals.
2. A non-refundable application fee (see below).

3. Official transcripts of work done at all undergraduate and graduate schools attended.
4. An official copy of the results of the Miller Analogies Test taken within the past five years.
5. Three letters of reference, one each from a previous teacher, a present supervisor, and from a person who has known the applicant in a professional capacity.

If possible, applicants should arrange an interview with the program coordinator to discuss their application. The program coordinator will submit a recommendation to the Admissions and Academic Policy Committee based on the interview.

An applicant may take up to two courses during the time his/her application is being considered. Grades in the courses will be considered in the admissions process.

Registration

Registration for classes normally takes place six to eight weeks prior to the meeting of a class. Registration materials are available from the program director or the program coordinators. Students may register by mail, but their registration must be approved by their advisor. Students may register anytime up to the first day of class, but the College reserves the right to limit enrollment in classes.

Transfer Policy

The maximum number of credits that can be transferred into the program is six. All requests for transfer of credits must be made through the student's advisor and approved by the graduate program director. Students will be expected to provide official transcripts plus any additional documentation for the coursework that is requested by the College.

Transfer credit is given only for grades of B- or better, and the coursework must have been completed within five years of admission to the program.

Matriculation

After completing fifteen credit hours of work in the program, a student will apply for matriculation and candidacy status. Applications for candidacy are filed with the appropriate program coordinator. Students may not begin their master's thesis or project before being admitted to candidacy status.

The application for candidacy will include:

1. An official application for advancement to candidacy.
2. Official transcripts for all work completed.
3. A program of study for completion of the requirements for the degree approved by the program coordinator.
4. A tentative topic and outline for the master's degree project or thesis.

The Admissions and Academic Policy Committee will meet once a semester, as indicated on the academic calendar, to consider applications for candidacy.

Degree Requirements

The following graduation requirements apply to all degrees under this program:

1. Completion of not less than thirty credits of approved graduate study.
2. An overall quality point index (Q.P.I.) of 3.0 for all course-work taken at Allentown College related to the degree.
3. Resolution of all incomplete grades.
4. Completion of an approved project or thesis.
5. Presentation of the completed project and/or thesis at a public meeting or conference.

Academic Regulations

Students may elect to take courses from other graduate programs in the College. These courses are offered on different calendars, hence the student should consult the appropriate academic calendar listed with each degree program. All classes taken as part of the degree program require the approval of the program coordinator.

1. Credit Load. The maximum number of credits applicable to a graduate degree that a student may take during an eight-week summer session is nine.
2. Core Courses. The core requirement for each of the master of education degree programs is nine credits. Of the nine credits, three specific core courses are required (ED 501, ED 502, ED 504) and another is an elective (either ED 506 or ED 508).
3. Research Class. It is highly recommended that ED 501 Introduction to Educational Research be taken early in the graduate program.

Academic Schedule

The Master of Education programs are designed for teachers in the basic education community. The courses are offered during the summer on a regular basis. Typically each course is offered once every three years, and some courses are offered more frequently.

Students are encouraged to limit their summer course load to eight credits or fewer. Students should be able to complete the program in three summers if they are willing to take some independent study or thesis work during the academic year.

The summer sessions are eight weeks in length, starting in late June and continuing through the middle of August. During the summer session, classes usually meet Monday through Thursday.

Students have the opportunity to take workshops and independent studies during the academic year. Courses are offered during the regular school year in evening hours when enrollment warrants it .

Expenses

Tuition (per semester hour)	$200.00
Application Fee (new student)	25.00
Graduation Fee	70.00
Late Registration Fee	25.00
Returned Check Service Fee	10.00
Readmission Fee	15.00

Withdrawal and Refund

For students in an eight-week session, the refund on withdrawal policy is as follows:

Withdrawal after 1st class:	75% of tuition refunded
Withdrawal after 2nd class:	45% of tuition refunded
Withdrawal after 3rd class:	25% of tuition refunded
Withdrawal after beginning of 4th class	NO REFUND

Calendar

Summer 1989, June 26, 1989 to August 19, 1989

June 26	Monday	Last day for regidtration
June 26	Monday	Classes begin.
June 28	Wednesday	Last day to add or drop a course
July 3,4		Fourth of July Holiday
July 24	Monday	Last day for withdrawal from course with W, WP or WF
August 11	Friday	Meeting of Admissions and Academic Policies Committee
August 19	Saturday	Last day of Summer Session

Summer 1990, June 25, 1990 to August 18, 1990

June 25	Monday	Last day for regidtration
June 25	Monday	Classes begin.
June 27	Wednesday	Last day to add or drop a course
July 4,5		Fourth of July Holiday
July 24	Monday	Last day for withdrawal from course with W, WP or WF
August 9	Friday	Meeting of Admissions and Academic Policies Committee
August 18	Saturday	Last day of Summer Session

*Required Course

ED 501 Introduction to Educational Research* (3 Credits)

An introduction to the methods and products of educational research. The focus is on developing skills in locating and analyzing educational research through the use of systematic searching techniques and evaluative criteria. Prerequisite: Admission to a graduate program in Education or permission of the instructor.

ED 502 Advanced Educational Psychology* (2 Credits)

A study of the models and theories of current educational practice with a view toward providing more effective instruction in the schools.

ED 504 Philosophical and Sociological Aspects of Education* (2 Credits)

A study of the rationales and social constructs which impact the social and moral precepts of our schools and the educational process.

ED 506 The School Curriculum (2 Credits)

A review of the major historical events and educational movements which have influenced the school curriculum. Students will study the effects of each of the major movements on the development of the curriculum in their individual fields of study.

ED 508 Psychology of Adult Learners (2 Credits)

A study of research on the learning and training of adults which has implications for staff development activities in the school setting.

ED 560-9 Workshops in Education (1-3 Credits)

Specialized workshops dealing with the application of technology in the educational environment.

ED 570 Readings in Education (1-2 Credits)

An independent reading class for students with special interests and needs. The reading list is developed by the student and the instructor. Prerequisite: Graduate status. By arrangement with instructor.

ED 580 Internship in Education (1-2 Credits)

A directed instructional project in which the student receives credit for conducting workshops, assisting in the teaching of courses, and/or working in an instructional laboratory. Prerequisite: Graduate status.

ED 590 Special Topics: Education (1-3 Credits)

Course offered periodically on topics of special interest.

Allentown College of Saint Francis de Sales

CHEMISTRY PROGRAM

Dr. Rodger Berg, Program Coordinator
Department of Chemistry
215-282-1100, ext. 1220

The Master of Education in Chemistry Program is designed for high school chemistry teachers to improve their knowledge in the traditional areas of the curriculum. A graduate of this program is able to offer leadership in the development of a high school chemistry curriculum and to teach a College Entrance Examination Board Advanced Placement course in chemistry.

Program Requirements

1. Major Courses: [15 Credits]

CH 510	General Chemistry for Teachers*	3 Credits
CH 515	Analytical Chemistry for Teachers*	3 Credits
CH 520	Physical Chemistry for Teachers*	3 Credits
CH 525	Organic Chemistry for Teachers	3 Credits
CH 530	Biochemistry for Teachers	3 Credits
CH 600	Project: Chemical Education*	3 Credits

2. Core Courses [9 Credits]

ED 501	Introduction to Educational Research*	3 Credits
ED 502	Advanced Educational Psychology*	2 Credits
ED 504	Philosophical and Sociological Aspects of Education*	2 Credits

One of the following two courses is required:

ED 506	The School Curriculum	2 Credits
ED 508	Psychology of Adult Learners	2 Credits

3. Elective Courses: [6 Credits]

Courses selected from the chemistry program, other graduate programs, or workshops, with the advisor's approval.

A total of thirty semester hours is required for graduation.

Course Descriptions

CH 510 General Chemistry for Teachers* (3 Credits)

An in-depth study of selected topics in General Chemistry, in particular those topics directly related to the high school curriculum with special emphasis on the use of laboratory exercises and lecture demonstrations as strategies for instruction.

*Required Course

CH 515 Analytical Chemistry for Teachers* (3 Credits)

An in-depth study of selected topics in Analytical Chemistry, in particular those topics directly related to the high school curriculum with special emphasis on the use of laboratory exercises and lecture demonstrations involving appropriate chemical instrumentation as strategies for instruction.

CH 520 Physical Chemistry for Teachers* (3 Credits)

An in-depth study of selected topics in Physical Chemistry, in particular those topics directly related to the high school curriculum with special emphasis on the use of laboratory exercises and lecture demonstrations as strategies for instruction.

CH 525 Organic Chemistry for Teachers (3 Credits)

An in-depth study of selected topics in Organic Chemistry, in particular those topics directly related to the high school curriculum with special emphasis on the use of laboratory exercises and lecture demonstrations as strategies for instruction.

CH 530 Biochemistry for Teachers (3 Credits)

An in-depth study of selected topics in Biochemistry, in particular those topics directly related to the high school curriculum with special emphasis on the use of laboratory exercises and lecture demonstrations as strategies for instruction.

CH 560-9 Workshops in Chemical Education (1-3 Credits)

Specialized workshops dealing with the teaching of chemistry in the pre-college environment. Typical workshops will include demonstration and laboratory exercises appropriate for the grade level taught by the participating teachers.

CH 570 Readings in Chemical Education (1-2 Credits)

An independent study for students with special interests and needs. The reading list is developed by the student and the instructor. Prerequisite: Graduate status. By arrangement with instructor.

CH 580 Internship in Chemistry (1-2 Credits)

A directed instructional project in which the student receives credit for conducting workshops, assisting in the teaching of courses, and/or working in an instructional laboratory. Prerequisite: Graduate status.

*Required Course

CH 590 Special Topics: Chemical Education (1-3 Credits)

Course offered periodically on topics of special interest.

CH 600 Project: Chemical Education* (1-3 Credits)

The terminal course in the Master of Education in Chemistry Program. A total of three credits of CH 600 is required for the Master of Education Degree in Chemistry. These credits may be taken one at a time. Prerequisite: Approval of advisor.

*Required Course

COMPUTER SCIENCE PROGRAM

Mr. John Meinke, Program Coordinator
Department of Mathematics and Computer Science
215-282-1100, ext. 1231

The Master of Education in Computer Science Program is designed to improve the academic preparation of pre-college computer science teachers. The program is based on the College Entrance Examination Board Advanced Placement program in computer science — a program which is consistent with the Association for Computer Machinery's recommendations for undergraduate computer science. A graduate of the program is prepared to teach an Advanced Placement Computer Science course at either the A or the AB level.

Program Requirements

1. Major Courses [15 Credits]

CS 510	Computing for Educators*	3 Credits
CS 515	Problem Solving with Pascal*	3 Credits
CS 520	File Processing and Data Structures*	3 Credits
CS 525	Computer Concepts	3 Credits
CS 600	Project: Computer Science*	3 Credits

2. Core Courses [9 Credits]

ED 501	Introduction to Educational Research*	3 Credits
ED 502	Advanced Educational Psychology*	2 Credits
ED 504	Philosophical and Sociological Aspects of Education*	2 Credits

One of the following two courses is required:

ED 506	The School Curriculum	2 Credits
ED 508	Psychology of Adult Learners	2 Credits

3. Elective Courses: [6 Credits]

Courses selected from the computer science program, other graduate programs, or workshops, with the advisor's approval.

Recommended electives from other graduate programs:

CE 515	Advanced BASIC for Educators	3 Credits
CE 520	Authoring Languages and Systems	3 Credits
CE 530	The Computer Curriculum and Other Issues	3 Credits
CE 535	Microcomputer Systems	3 Credits
CE 550	Teaching Computer Science	3 Credits
MA 530	Probability and Statistics	3 Credits

A total of thirty semester hours is required for graduation.

*Required Course

CS 510 Computing for Educators* (3 Credits)

An introduction to the operating systems of computers, the use of application software, social issues related to computers and computing, and the rudiments of programming using structured programming as characterized by top-down design with step-wise refinement.

CS 515 Problem Solving with Pascal* (3 Credits)

A course designed to develop problem-solving skills in the programming language Pascal with an emphasis on preparation for teaching of a pre-college Pascal course. The course focuses on algorithm development and top-down structured programming with step-wise refinement.

CS 520 File Processing and Data Structures* (3 Credits)

A study of abstract data types, including logical representations, physical implementation, and algorithms to manipulate primitives, composite, and complex data structures. In addition, topics of file organization (including sequential, indexed sequential, and hashed files), multi-key files, and memory management (including discussion of dynamic storage management, garbage collection, and virtual memory) are presented. Prerequisite: CS 515 (Cross listed as IT 502).

CS 525 Computer Concepts (3 Credits)

An overview of computer system organization, logic, microarchitecture, macroarchitecture, data communications, operating systems, and assembly languages. Hardware and software concepts are discussed as they relate to the system analysis and design process and the development of applications software. Prerequisite: CS 520 (Cross listed as IT 501).

CS 560-9 Workshops in Computer Science (1-3 Credits)

Specialized workshops dealing with the application of technology in the educational environment.

CS 570 Readings in Computer Science (1-2 Credits)

An independent study for students with special interests and needs. The reading list is developed by the student and the instructor. Prerequisite: Graduate status. By arrangement with instructor.

*Required Course

CS 580 Internship in Computer Science (1-2 Credits)

A directed instructional project in which the student receives credit for conducting workshops, assisting in the teaching of courses, and/or working in an instructional laboratory. Prerequisite: Graduate status.

CS 590 Special Topics: Computer Science (1-3 Credits)

Course offered periodically on topics of special interest.

CS 600 Project: Computer Science* (1-3 Credits)

The terminal course in the Computer Science Program. A total of three credits of CS 600 is required for the Master of Education Degree in Computer Science. These credits may be taken one at a time. Prerequisite: Approval of advisor.

*Required Course

Allentown College of Saint Francis de Sales

COMPUTERS IN EDUCATION PROGRAM

Dr. Pat McIntyre, Program Coordinator
Department of Education
215-282-1100, ext. 1401

The Master of Education in Computers in Education Program is designed for the pre-college teacher who is interested in the application of microcomputer technology to the school setting. Although the candidate for the degree might be a computer science teacher, it is more likely that he/she will be someone interested in the application of the computer to an area other than computer science or an individual who will serve as a computer coordinator at the school or district level.

A graduate of this program is qualified to be a trainer of teachers or other professionals interested in application software.

Program Requirements

1. Major Courses [15 Credits]

CE 510	LOGO	3 Credits
CE 515	Advanced BASIC for Educators*	3 Credits
CE 520	Authoring Languages and Systems*	3 Credits
CE 525	Software Collections*	3 Credits
CE 530	The Computer Curriculum and Other Issues*	3 Credits
CE 535	Microcomputer Systems	3 Credits
CE 550	Teaching Computer Science	3 Credits
CE 600	Project: Computer Education*	3 Credits

2. Core Courses [9 Credits]

ED 501	Introduction to Educational Research*	3 Credits
ED 502	Advanced Educational Psychology*	2 Credits
ED 504	Philosophical and Sociological Aspects of Education*	2 Credits

One of the following two courses is required:

ED 506	The School Curriculum	2 Credits
ED 508	Psychology of Adult Learners	2 Credits

3. Elective Courses: [6 Credits]

Courses selected from the computers in education program, other graduate programs, or workshops, with the advisor's approval. Recommended electives from other graduate programs:

*Required Course

CS 515	Problem Solving with Pascal	3 Credits
CS 520	File Processing and Data Structures	3 Credits
CS 525	Computer Concepts	3 Credits

A total of thirty semester hours is required for graduation.

Course Descriptions

CE 510 LOGO (3 Credits)

An introductory course in the LOGO language. The topics to be covered are the syntax, logistics, resources, philosophical, and research support for the language.

CE 515 Advanced BASIC for Educators* (3 Credits)

BASIC programming including arrays, subroutines, sorts, files, string variables, graphics, and advanced programming techniques with special focus on structured programming. Prerequisite: A working knowledge of BASIC.

CE 520 Authoring Languages and Systems* (3 Credits)

An introduction to the HyperCard authoring language and comparisons with other CAI languages and/or systems. Prerequisite: Prior programming experience or permission of instructor.

CE 525 Software Collections* (3 Credits)

An analysis of software evaluation, development and management of software collections, and software maintenance.

CE 530 The Computer Curriculum and Other Issues* (3 Credits)

A review and analysis of the use and role of computers in society and the implications for teachers and students. Software, media, curriculum guides, and instructional techniques.

CE 535 Microcomputers Systems (3 Credits)

An analysis of the major functions and features of a variety of microcomputer and related peripherals. Disk operating systems, telecommunications, networking, and maintenance. Prerequisites: Knowledge of at least one programming language.

*Required Course

CE 550 Teaching Computer Science (3 Credits)

A study of the research and authoritative opinion on the goals, objectives, and methods of teaching computer science with special interest in concepts of structured programming and software engineering and maintenance.

CE 560-9 Workshops in Computers in Education (1-3 Credits)

Specialized workshops dealing with the application of technology in the educational environment.

CE 570 Readings in Computers in Education (1-2 Credits)

An independent reading program for students with special interests and needs. The reading list is developed by the student and the instructor. Prerequisite: Graduate status. By arrangement with instructor.

CE 580 Internship in Computers in Education (1-2 Credits)

A directed instructional project in which the student receives credit for conducting workshops, assisting in the teaching of courses, and/or working in an instructional laboratory. Prerequisite: Graduate status.

CE 590 Special Topics: Computers in Education (1-3 Credits)

Course offered periodically on topics of special interest.

CE 600 Project: Computers in Education* (1-3 Credits)

The terminal course in the Computers in Education Program. A total of three credits of CE 600 is required for the Master of Education Degree in Computers in Education. These credits may be taken one at a time. Prerequisite: Approval of advisor.

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*Required Course

ENGLISH PROGRAM

Dr. Kenneth Fifer, Program Coordinator
Department of English
215-282-1100, ext. 1357

The Master of Education in English Program is designed for secondary school teachers of language arts and literature. Candidates for the degree usually are established teachers seeking a fuller development of their expertise.

Program Requirements

1. Major Courses [15 Credits]

EN 510	The Tragic Tradition	3 Credits
EN 515	Critical Approaches to English Renaissance Literature	3 Credits
EN 520	Critical Approaches to British Romantic and Victorian Literature	3 Credits
EN 525	Critical Approaches to British Modern Literature	3 Credits
EN 530	Critical Approaches to 19th Century American Literature	3 Credits
EN 535	Critical Approaches to 20th Century American Literature	3 Credits
EN 600	Project in English*	3 Credits

2. Core Courses [9 Credits]

ED 501	Introduction to Educational Research*	3 Credits
ED 502	Advanced Educational Psychology*	2 Credits
ED 504	Philosophical and Sociological Aspects of Education*	2 Credits

One of the following two courses is required:

ED 506	The School Curriculum	2 Credits
ED 508	Psychology of Adult Learners	2 Credits

3. Elective Courses: [6 Credits]

Courses selected from the English program, other graduate programs, or workshops, with the advisor's approval.

A total of thirty semester hours is required for graduation.

*Required Course

EN 510 The Tragic Tradition (3 Credits)

Studies of varying critical and pedagogical approaches to major works of tragic literature. Seminar environment emphasizes active participation by all class members.

EN 515 Critical Approaches to English Renaissance Literature (3 Credits)

Studies of varying critical and pedagogical approaches to major works and major authors. Seminar environment emphasizes active participation by all class members.

EN 520 Critical Approaches to British Romantic and Victorian Literature (3 Credits)

Studies of varying critical and pedagogical approaches to major works and major authors. Seminar environment emphasizes active participation by all class members.

EN 525 Critical Approaches to British Modern Literature (3 Credits)

Studies of varying critical and pedagogical approaches to major works and major authors. Seminar environment emphasizes active participation by all class members.

EN 530 Critical Approaches to 19th Century American Literature (3 Credits)

Studies of varying critical and pedagogical approaches to major works and major authors. Seminar environment emphasizes active participation by all class members.

EN 535 Critical Approaches to 20th Century American Literature (3 Credits)

Studies of varying critical and pedagogical approaches to major works and major authors. Seminar environment emphasizes active participation by all class members.

EN 560-9 Writing Workshops in English (1-3 Credits)

Specialized workshops on the teaching of writing.

EN 590 Special Topics: English (1-3 Credits)

Seminars offered periodically on topics of interest.

EN 600 Project: English* (1-3 Credits)

The terminal course in the English Program. The project is designed by the student and the instructor. A total of three credits of EN 600 is required for the Master of Education Degree in English. These credits may be taken one at a time. Prerequisite: Approval of advisor.

MATHEMATICS PROGRAM

Dr. Karen Doyle Walton
Academic Dean
215-282-1100, ext. 1229

The Master of Education in Mathematics Program is designed to provide the pre-college teacher with the breadth and depth of mathematics appropriate for teaching grades 7-12, including the College Entrance Examination Board Advanced Placement course in calculus. Participants are also trained in the use of the microcomputer as an instructional tool and motivational device to clarify and enhance the teaching of mathematical concepts.

Program Requirements

1. Major Courses [15 Credits]

MA 510	Analysis I*	3 Credits
MA 515	Analysis II	3 Credits
MA 520	Discrete Mathematics*	3 Credits
MA 525	Advanced Euclidean Geometry*	3 Credits
MA 530	Probability and Statistics	3 Credits
MA 600	Project: Mathematics*	3 Credits

[Note: Either MA 515 or MA 530 is required.]

2. Core Courses [9 Credits]

ED 501	Introduction to Educational Research*	3 Credits
ED 502	Advanced Educational Psychology*	2 Credits
ED 504	Philosophical and Sociological Aspects of Education*	2 Credits

One of the following two courses is required:

ED 506	The School Curriculum	2 Credits
ED 508	Psychology of Adult Learners	2 Credits

3. Elective Courses [6 Credits]

Courses selected from the mathematics program, other graduate programs, or workshops, with the advisor's approval.

Recommended electives from other graduate programs:

CS 510	Computing for Teachers	3 Credits
CS 515	Problem Solving with Pascal	3 Credits
CE 510	LOGO	3 Credits
CE 515	Advanced BASIC for Educators	3 Credits
CE 520	Authoring Languages and Systems	3 Credits
CE 550	Teaching Computer Science	3 Credits

*Required Course

Students who have not previously taken a Pascal course should take CS 515 as three of their elective credits.

A total of thirty semester hours is required for graduation.

MA 510 Analysis I* (3 Credits)

A study of the concepts generally included in high school calculus, covering the College Entrance Examination Board Advanced Placement AB calculus curriculum. Emphasis is placed on the development of limit, derivative, and integral, including the use of the microcomputer to present these topics in the secondary school classroom.

MA 515 Analysis II (3 Credits)

A continuation of Analysis I, covering the CEEB Advanced Placement BC calculus curriculum and including the use of the microcomputer to present these topics in the secondary school classroom. Prerequisite: Analysis I

MA 520 Discrete Mathematics* (3 Credits)

Foundations of mathematics; sets, relations, and functions; algebraic structures; elementary number theory; kinds of infinity; and other topics related to the secondary school curricula.

MA 525 Advanced Euclidean Geometry* (3 Credits)

A study of elementary Euclidean geometry from an advanced standpoint. An introduction to non-Euclidean geometries and computer applications to the study of Euclidean geometry will be included.

MA 530 Probability and Statistics (3 Credits)

Basic probability and statistics including independence and conditional probability, probability functions, normal curve, measures of central tendency and variability, correlation, binomial distribution, expected value, sampling and hypothesis testing, and confidence intervals. Computer applications to the study of probability and statistics will be included.

MA 560-9 Workshops in Mathematics (1-3 Credits)

Specialized workshops dealing with the application of technology in the educational environment.

*Required Course

MA 570 Readings in Mathematics (1-2 Credits)

An independent study for students with special interests and needs. The reading list is developed by the student and the instructor. Prerequisite: Graduate status. By arrangement with instructor.

MA 580 Internship in Mathematics (1-2 Credits)

A directed instructional project in which the student receives credit for conducting workshops, assisting in the teaching of courses, and/or working in an instructional laboratory. Prerequisite: Graduate status.

MA 590 Special Topics: Mathematics (1-3 Credits)

Course offered periodically on topics of special interest.

MA 600 Project: Mathematics* (1-3 Credits)

The terminal course in the Mathematics Program. A total of three credits is required for the Master of Education Degree in Mathematics. These credits may be taken one at a time. Prerequisite: Approval of advisor.

*Required Course

Allentown College of Saint Francis de Sales

MASTER OF SCIENCE IN MANAGEMENT INFORMATION SYSTEMS

Dr. Julius G. Bede, Director
Department of Computer Science
215-282-1100, ext. 1280

The MS in MIS program has been designed on the premise that its graduates will be involved either in a direct, or in a peripheral MIS function. In a direct role, these graduates will define, plan, design, implement, maintain, or manage MIS functions. Through the integrating nature of MIS, the graduates are prepared and positioned for assignments in a variety of information systems related functional areas. Academic preparation, therefore, emphasizes a thorough familiarity with information technologies, and allows the exploration of related fields such as finance, planning, marketing, distribution, administration, production, and others. In addition, the program must address the legal, moral and ethical issues associated with information technologies.

The objectives of the MS in MIS program are:

- to provide an integrated view of information technologies,
- to enhance existing knowledge and experience the student already possesses in one or more MIS area,
- to help students to acquire in-depth knowledge in one or more specific information technology subjects,
- to offer graduate level educational opportunities for professionals involved directly or indirectly in management information systems functions,
- to help local organizations in their effort to adopt new technologies by providing access to efficient and inexpensive educational facilities,

and

- to develop awareness of the impact of information technologies on individuals as well as on the contemporary society.

Admission Requirements

Requirements for admission to the MS in MIS program are:

1. A Baccalaureate degree from an accredited college or university.
2. An undergraduate cumulative grade point average of at least 3.0.
3. Proficiency in at least one high level programming language.
4. Proficiency in data structure and basic computer organization theory.

Applicants may be admitted to the Program in one of the following categories:

Regular Student Category.

The student in this category has met all the admission requirements.

Provisional Student Category.

Applicants who have an appropriate baccalaureate degree but lack one or more requirements may be admitted to the program on a provisional basis. Provisional students may apply for regular student status upon satisfying the following conditions:

- An applicant whose undergraduate cumulative quality print index is less than 3.0 may be required to take and to obtain acceptable scores on either the Graduate Record Examination (GRE) or the Graduate Management Admission Test (GMAT).
- Applicants who lack academic preparation in a high-level programming language, data structures theory, or computer organization theory, must complete the two foundation courses, IT501 and IT502, with grades not lower than B in each course. These courses cannot be applied to satisfy the MS in MIS degree requirements.
- Additional remedial course work may be required from applicants who have background deficiencies, but otherwise show promise to undertake graduate studies.

Special Student Category.

A qualified applicant who is undecided about seeking Regular or Provisional Student Status, may be permitted to enroll in one course without completing all admission requirements as a special student. The applicant must satisfy all admission requirements before enrolling in subsequent courses.

Auditing Student Category.

The Director, MS in MIS program, may permit qualified applicants to audit selected courses. Such applicants must submit the MS in MIS application form, must pay the non-refundable application fee and pay the full tuition fee.

Applicants whose native language is not English may be required to take and to obtain acceptable scores on the Test of English as a Foreign Language (TOEFL) and the Test of Spoken English (TSE).

Application Procedure

Application forms may be obtained from the Director, MS in MIS Program. Interested students are encouraged to discuss their background with the Director, MS in MIS program prior to submitting their application for admission.

Application for admission will be considered after the student has submitted:

1. A completed application form.
2. A resume.
3. Three letters of recommendation.
4 Official transcripts of all undergraduate and graduate work.
5. GRE (Graduate Record Examination) or GMAT (Graduate Management Admissions Test) scores if applicable, and
6. A non-refundable application fee of $25.00.

When these materials are received, the applicant may be interviewed by a member of the MIS Admissions and Academic Policies Committee. During the interview the following points will be discussed:

- Factors in the applicant's background to justify the desire to pursue the MS in MIS degree,
- Aptitude for graduate study,
- Commitment to the ideals associated with the MIS profession,
- Plans for completion of the program.

Regular students may transfer six graduate credits to the program. Transfer credits must have been obtained at an accredited institution, must be compatible with the program and the student's interest, and must be approved by the Program Director. Additional transfer credits must be approved by the Vice-President of Academic Affairs upon the recommendation of the Program Director and the MIS Admission and Academic Policies Committee.

MIS Academic Schedule

The Academic Year of the MS in MIS program consists of four sessions:

Session 1	(Winter)	12 weeks	early January - mid March
Session 2	(Spring)	12 weeks	late March - mid June
Session 3	(Summer)	6 weeks	late June - early August
Session 4	(Fall)	12 weeks	early September - late November

In the 12 week sessions, each course meets once a week on a weekday evening from 6 - 9:30 PM.

In the 6 week summer session, each course meets twice a week on weekdays from 6 - 9:30 PM.

All admissions and admission related matters must be approved by the MIS Admissions and Academic Policies Committee. Applicants will be notified at the earliest possible date about their admission status.

Matriculation

Regular students are eligible for matriculation after completing twelve credits of course work with at least a 3.0 quality point index. In general, the core courses will be used to satisfy twelve credit requirements for matriculation.

Registration

Registration for a session normally takes place 2-5 weeks before the first class meeting. Registration must be approved by the advisor of the student. The College reserves the right to cancel a course for which there is insufficient enrollment.

Expenses

Tuition (per semester hour)	$260.00
Application Fee (new students)	25.00
Science Lab Fee*	65.00
Graduation Fee	70.00
Late Registration Fee	25.00
Change of Roster Fee	10.00
Returned Check Service Fee	10.00
Readmission Fee	25.00

*Where applicable

Withrawal and Refund

For MS in MIS students in a twelve-week session, the refund on withdrawal policy is as follows:

Withdrawal after 1st class:	80% of tuition refunded
Withdrawal after 2nd class:	65% of tuition refunded
Withdrawal after 3rd class:	50% of tuition refunded
Withdrawal after 4th class:	25% of tuition refunded
Withdrawal after beginning of 5th class	NO REFUND

For MS in MIS students in a six-week session, the refund on withdrawal policy is as follows:

Withdrawal after 1st class:	65% of tuition refunded
Withdrawal after 2nd class:	25% of tuition refunded
Withdrawal after beginning of 3rd class:	NO REFUND

Degree Requirements

The Master of Science Degree will be awarded to candidates who have satisfied the following requirements:

The completion of 36 credits of course work with a quality point index of at least 3.0. An appropriate thesis may be used to satisfy a maximum of six credits. The student needs the approval of the MIS Admission and Academic Policies Committee to choose the thesis option.

The successful passing of a comprehensive examination. This examination is administered by a committee with representatives from the local MIS organizations. The examination is to be taken after the student completed the Core Course requirements.

Upon completing all requirements, the MIS Admissions and Academic Policies Committee will recommend to the Faculty that the MS in MIS degree be conferred upon the candidate.

The MS in MIS curriculum is designed to meet the educational requirements of the professionals who are already involved in some facets of information systems or who are interested in working in the information technologies area.

Eight courses consisting of 24 credits serve as the core of the program. All students must take these eight courses.

Twelve additional credits are required to complete the curriculum. Any combination of IT Elective courses, Wilkes College MBA courses offered at Allentown College of St. Francis de Sales, and a 3-6 credit thesis may be used to satisfy this requirement.

Program Requirements

1. Foundation Courses

IT501	Computer Concepts	3 Credits
IT502	Data Structures and Algorithms	3 Credits

2. Core Courses

IT511	Data Management I	3 Credits
IT526	Data Communications	3 Credits
IT532	Information Systems Analysis	3 Credits
IT533	Information Systems Design	3 Credits
IT536	Software Engineering I	3 Credits
IT541	Decision Systems	3 Credits
IT551	Information Systems Projects	3 Credits
IT546	Ethical and Social Issues of Computer Technology	3 Credits

3. Electives

IT512	Data Management II	3 Credits
IT527	Data Communications II	3 Credits
IT537	Software Engineering II	3 Credits
IT561	Special Topics In Information Technologies	3 Credits
IT599	Thesis	1-6 Credits

Calendar
Master of Science in Management Information Systems

Fall Semester, August 28, 1989 to November 20, 1989

August 28	Monday	Classes begin.
September 4	Monday	Labor Day Holiday.
September 6	Wednesday	Opening Mass of the Holy Spirit.
September 11	Monday	Last day to add or drop a course.
October 9	Monday	Last day for withdrawal from course with W, WP or WF.
October 16	Monday	Last day for submitting applications for Winter graduation.
November 13, 15, 17, 20		Preregistration for Winter and Spring Sessions.
November 20	Monday	Last day of Autumn Session.

Winter Semester, January 2, 1990 to March 26, 1990

January 2	Tuesday	Classes begin.
January 15	Monday	Last day to add or drop a course.
January 28	Sunday	Winter Graduation.
February 5	Monday	Last day for withdrawal from course with W, WP or WF.
March 1	Tuesday	Last day for submitting applications for May graduation.
March 26	Monday	Last day of Winter Session.

Spring Semester, April 2, 1990 to June 25, 1990

April 2	Monday	Classes begin.
April 12	Monday	Last day to add or drop a course.
April 18-25		Preregistration for Summer and Fall sessions.
May 3	Thursday	Last day for withdrawal from course with W, WP or WF.
May 20	Sunday	Baccalaureate and Commencement.
May 28	Monday	Memorial Day (Observed) - Holiday.
June 25	Monday	Last day of Spring Session.

Summer Semester, July 9, 1990 to August 15, 1990

July 9	Monday	Classes begin.
July 12	Thursday	Last day to add or drop a course.
July 24	Tuesday	Last day for withdrawal from course with W, WP or WF.
August 15	Wednesday	Last day of Summer Session.

IT501 Computer Concepts** (3 Credits)

An overview of computer systems organization, logic, microarchitecture, macroarchitecture, data flow, operating systems and assembly languages. Hardware and system software concepts will be discussed as they relate to systems analysis and design process and the development of application software. Prerequisite: College Algebra

IT502 Data Structures and Algorithms** (3 Credits)

Definitions and concepts of basic data structures, software design methodologies and programming techniques. Files and file organizations structured problem solving in a high level programming language environment. Prerequisite: College Algebra

IT511 Data Management I* (3 Credits)

The role of database management systems in information systems design. The structural description of network (CODASYL), hierarchic and relational databases. Database design techniques. Relational data base design. Relational query language programming. An introduction to database administration. Prerequisite: IT502 or equivalent.

IT512 Data Management II (3 Credits)

Examination of large scale database management systems: IMS, DB2, IDBM, INGRES. Database tools for performance evaluation, reorganization, query and monitoring. Data base currency, recovery, security and integrity. Prerequisite: IT511

IT541 Decision Systems* (3 Credits)

Decision systems model formulation, design, construction, and validation. Topics include: Monte Carlo techniques, simulation languages, random numbers and verifications. The concepts of building models of complex systems operating under uncertainty. Discussions will cover optimization models for discrete systems and the construction and solution of mathematical programming models. Students will participate in case studies and simulated problem solutions. Prerequisite: College Algebra or equivalent.

IT526 Data Communications I* (3 Credits)

An introduction to basic communication theory. The role of communication hardware components. Analog and digital transmission procedures. Common carrier services. An introduction to communication protocols, OSI architecture, ISDN. Prerequisite: College Algebra or equivalent.

* Core Course
** Foundation Course

IT527 Data Communications II (3 Credits)

Examination of telecommunication architecture, software, access methods and protocols. The Open System Interconnect (OSI) model. Analysis, control and management of telecommunication networks. Local Area Network topologies. Economy considerations in network solutions. Prerequisite: IT526

IT531 Information Systems Planning (3 Credits)

A discussion of the organization theory principles and strategy as they relate to information systems. Systems structure, representation and analysis. Strategic, operational, contingency, disaster and facility planning of information systems. Prerequisite: IT501 or equivalent.

IT532 Information Systems Analysis* (3 Credits)

The role of information systems in organizations. The system development cycle as a basic concept for application development. Tools of the structural analysis, data flow, diagrams, data dictionaries, decision tables and trees, structured English. Examination of group dynamics. Prerequisite: IT502 or equivalent.

IT533 Information Systems Design* (3 Credits)

The transformation of the systems design requirements into a detailed physical design. Implementation and installation of the system. Automated design tools. Prerequisite: IT532.

IT536 Software Engineering I* (3 Credits)

A review of software engineering concepts. Structured analysis, design and programming. The total software development environment. Software engineering tools. Prerequisite: IT533

IT537 Software Engineering II (3 Credits)

An introduction to high level software engineering languages. Design and code reusability. Computer Aided Software Engineering (CASE) studies. Prerequisite: IT536

IT546 Ethical and Social Issues of Computer Technology* (3 Credits)

A study of ethics, values, technology and business. The economic and social effects of technology conflict and crime in the technological society. Prerequisite: None.

* Core Course
** Foundation Course

IT551 Information Systems Projects* (3 Credits)

The practical application of MIS theory with attention to current MIS research and development. Registrants will complete a major project of their area of interest. Prerequisite: Advisor's permission.

IT561 Special Topics in Information Systems (3 Credits)

Courses to cover specialized information technology areas will be offered periodically. Possible topics include parallel processing, AI and expert systems, algorithm development, human factors engineering, electronic publishing, production control systems, etc. Prerequisite: Instructor's permission.

IT599 Master Thesis (1 to 6 Credits)

Prerequisite: Advisor's permission.

* Core Course
** Foundation Course

Faculty
1989-90 Academic Year

Julius G. Bede (1988)
Associate Professor of Mathematics/Computer Science
M.S.M.E., Lehigh University
Sc.D., Columbia University (1972)

Annette Benert (1979, 1980)
Associate Professor of English
B.A., Bethel College
M.A., Ph.D., Lehigh University (1975)

Rodger Berg (1977, 1980)
Associate Professor of Chemistry
B.S., Muhlenberg College
Ph.D., Lehigh University (1976)

Monica Ceru (1984)
Assistant Professor Mathematics/ Computer Science
B.A., Trenton State College
M.A.Ed., Jersey State College (1984)

Bernard F. Donahue, OSFS (1966)
Professor of Politics
A.B., Niagara University
M.A., The Catholic University of America
Ph.D., University of Pennsylvania (1966)
(on leave 1974-75, 1976-77)

William P. Dwyer, Jr. (1983)
Associate Professor of Accounting & Business
B.S., M.B.A., Lehigh University (1971)
C.P.A.

Kenneth Fifer (1981, 1982)
Associate Professor of English
B.A., College of the City of New York, C.U.N.Y.
M.A., Ph.D., University of Michigan (1972)
(on leave Fall 1989)

Frank J. Gadek (1968)
Professor of Chemistry
B.A., Siena College (New York)
Ph.D., The Catholic University of America (1969)
(on leave Fall 1974)

Lois M. Gadek (1969)
Associate Professor of English
A.B., Muhlenberg College
M.A., Lehigh University
Ph.D., Rutgers University (1978)
(on leave 1974-75, 1978-79, Fall 1979)

Joan F. Grindley (1987)
Associate Professor of Nursing
B.S.N., Boston College
M.S.N., University of Pennsylvania
Ed.D., Boston College (1979)

John Harvey, OSFS (1987)
Lecturer in Theology
A.B., M.A., S.T.L., S.T.D., The Catholic University of America (1951)

Caroline H. Hollshwandner (1975)
Professor of Nursing
B.S.N., Marquette University
M.A., St. Joseph's University (Philadelphia)
Ph.D., Thomas Jefferson University (1972)

Frank P. Jozsa, Jr. (1984)
Assistant Professor of Accounting & Business
B.S., M.S., Indiana State University
M.B.A., Butler University
Ph.D., Georgia State University (1977)

Mary Kracun (1981)
Assistant Professor of Nursing
B.S.N., Gwynedd-Mercy College
M.S.N., University of Pennsylvania
Ph.D., Texas Woman's University (1988)

Joseph Lambert (1985)
Assistant Professor of Psychology
B.A., M.A., Ph.D., Temple University (1972)

Samuel Martineau (1982)
Assistant Professor of Politics
B.S., SUNY-Oneonta
Ph.D., SUNY-Binghamton (1978)

A. Robert McGilvray, OSFS (1980)
Associate Professor of Education
B.A, Niagara University
S.T.L., University of Fribourg
M.A., Villanova University
D.Ed., The Catholic University of America (1980)

Patrick McIntyre (1988)
Professor of Education
B.Chem.Eng., The Catholic University of America
M.S., Polytechnical Institute of Brooklyn
Ph.D., University of Wisconsin (1972)

Kathleen McKeehan (1988)
Pool Professor of Nursing
B.S., St. Louis University
Certificate, Harvard University School of Public Health
Ph.D., Case Western Reserve University

John Meinke (1986)
Associate Professor of Mathematics/Computer Science
B.A., Ed.M., SUNY-Buffalo
M.A.T., University of Montana
M.S., Illinois Institute of Technology (1975)

Bernard O'Connor, OSFS (1974, 1980)
Associate Professor of Philosophy
A.B., M.A., The Catholic University of America
M.A., DeSales Hall School of Theology
Ph.D., The Catholic University of America (1986)
(on leave 1985-86)

Daniel Ross (1985)
Assistant Professor of English
A.B.J., M.A., University of Georgia
Ph.D., Purdue University (1984)

Karen M. Schaefer (1987)
Assistant Professor of Nursing
B.S.N., M.S.N., University of Pennsylvania
D.N.Sc., The Catholic University of America (1986)

Thomas Walter (1987)
Assistant Professor of Business
B.S., Lehigh University
M.B.A., New York University
D.B.A., Nova University (1987)

Karen Doyle Walton
Lecturer in Mathematics
A.B., Vassar College
M.A.T., Harvard University
M.A., University of Pittsburgh
D.Ed., Lehigh University (1983)

Shelley Yeager
Lecturer
B.S.N., Washington State University
M.S.N., University of San Diego

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Director of Systems Development and Services
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Long Associates

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Bethlehem Steel Corporation

Allentown College of Saint Francis de Sales

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Very Rev. Daniel G. Gambet, OSFS
B.A., Niagara University
M.A., The Catholic University of America
Ph.D., University of Pennsylvania

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A.B., M.A. The Catholic University of America
Ph.D., Universite Laval

Academic Dean and Director of Planning:
Karen Doyle Walton
A.B., Vassar College
M.A.T., Harvard University
M.A., University of Pittsburgh
Ed.D., Lehigh University

Dean of Continuing Education:
Ronald Bornmann
B.S., Pennsylvania State University
M.S. Ed., Temple University

Associate Dean for Extension Centers:
Alan V. Hall
B.S., Pennsylvania State University
M.Ed., Pennsylvania State University

Registrar:
Rev. Joseph J. McKenna, OSFS
B.S., Niagara University
M.A., The Catholic University of America

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B.A., Manhattan College
M.A., Ph.D., University of Pennsylvania

Coordinator of Annual Fund Programs:
Thomas L. Campbell
B.A., M.S., University of Delaware

Library Director:
Joan McIntyre
B.A., Hunter College
M.L.S., University of Washington
D.Ed., candidate, Seattle University

Director of Academic Computing Center
William Finley
B.S., Grove City College
M.S., Lehigh University

Student Services
Dean of Students:
Margaret G. Kender
B.S., West Chester State University
M.A., Villanova University

College Chaplain:
Rev. Stanley Dombrowski, OSFS
B.A., Allentown College
M.A., DeSales Hall School of Theology

Director of McShea College Center:
Timothy M. Fitzgerald
B.A., Pennsylvania State University

Director of Counseling:
Gregg Amore
B.A., M.Ed., D.Ed., Lehigh University

College Health Center:
Helen Danko, R.N.
Jean Maurer, R.N.

Treasurer and Secretary of the College:
Rev. John F. McGinley, OSFS
B.B.A., Niagara University
M.Ed., Temple University

APPENDIX D

INSERVICE WORKSHOP BROCHURES

GRADUATE COURSES*

ED 501 Introduction to Educational Research (3 Credits)

An introduction to the methods and products of educational research. The focus is on developing skills in locating and analyzing educational research through the use of systematic searching techniques and evaluative criteria. Prerequisite: Admission to a graduate program in Education or permission of the instructor.

June 26 - August 17, MTWTh
10:00 - 11:15 a.m.
Lecture Room, Trexler Library
Dr. Pat McIntyre

CH 510 General Chemistry for Teachers (3 Credits)

An in-depth study of selected topics in General Chemistry, in particular those topics directly related to the high school curriculum with special emphasis on the use of laboratory exercises and lecture demonstrations as strategies for instruction.

June 26 - August 17, MTWTh
11:30 a.m. - 12:45 p.m.
Room 127, Dooling Hall
Dr. Rodger Berg

CE 525 Software Collections (3 Credits)

An analysis of software evaluation, development and management of software collections, and software maintenance.

June 26 - August 17, MTWTh
1:00 - 2:15 p.m.
Educational Technology Center, Trexler Library
Dr. Pat McIntyre

CS 510 Computing for Educators (3 Credits)

An introduction to the operating systems of computers, the use of application software, social issues related to computers and computing, and the rudiments of programming using structured programming as characterized by top-down design with step-wise refinement.

June 26 - August 17, MTWTh
11:30 a.m. - 12:45 p.m.
Room 107, Dooling Hall
Mr. John Meinke

EN 535 Critical Approaches to 20th Century American Literature (3 Credits)

Studies of varying critical and pedagogical approaches to major works and major authors. Literature will be explored in the context of other aspects of American culture -- social structures, historical changes, the other arts. Students will develop modes of integrating critical and cultural materials into their courses. Seminar environment emphasizes active participation by all class members.

June 26 - August 17, MTWTh
1:00 - 2:15 p.m.
Room 108, Dooling Hall
Dr. Annette Benert

MA 510 Analysis I (3 Credits)

A study of the concepts generally included in high school calculus, covering the College Entrance Examination Board Advanced Placement AB calculus curriculum. Emphasis is placed on the development of limit, derivative, and integral, including the use of the microcomputer to present these topics in the secondary school classroom.

June 26 - August 17, MTWTh
8:30 - 9:45 a.m.
Room 107, Dooling Hall
Mr. William Finley

*Graduate courses are open to all interested teachers.

Tuition per semester hour $200.00
Deferred Payment plan available to teachers who are eligible for tuition assistance and/or reimbursement.

GRADUATE DEGREE PROGRAMS in EDUCATION

Allentown College of Saint Francis de Sales is pleased to announce that it has been approved by the Pennsylvania Department of Education to offer graduate degrees in Education. The following programs will be offered beginning the summer of 1989:

Master of Education in Chemistry
Master of Education in Computers in Education
Master of Education in Computer Science
Master of Education in English
Master of Education in Mathematics

Information can be obtained from:

Dr. Pat McIntyre
Department of Education
Allentown College
of
Saint Francis de Sales
Center Valley, PA 18034
(215) 282-1100, ext. 401

SUMMER SCHOOL for TEACHERS

JUNE 26 - AUGUST 17, 1989

Allentown College of Saint Francis de Sales

Center Valley, PA 18034
(215) 282 - 1100

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WORKSHOPS

CH 560 Methods of Teaching Chemistry (1 Credit)
Explore the use of technology in the chemistry classroom. Topics to include Project Seraphim software, interactive video, spreadsheets in the laboratory, hypercard, and lecture demonstrations.
July 7, 8; Friday, Saturday
9:00 a.m. - 5:00 p.m.
Room 127, Dooling Hall
Mr. Roy Arlotto, Dr. Rodger Berg, Mr. Dan Charney, and Dr. Pat McIntyre

CH 561 Teaching Chemistry with Large Scale Models (1 Credit)
Learn how to use models in classroom instruction and prepare a set of inorganic, organic, and crystal models. Participants will leave the workshop with a set of 25-35 models for classroom use.
July 21, 22; Friday, Saturday
9:00 a.m. - 5:00 p.m.
Room 127, Dooling Hall
Dr. Arthur Breyer

CH 562 Chemistry for Elementary and Middle School Teachers: Part I (1 Credit)
Explore the teaching of basic chemical principles through hands-on activities using safe and easily obtained materials. Topics will include the scientific method, kinetic molecular theory, classification of matter, and physical and chemical change. Background information will be provided, and participants will be provided with "laboratory" kits for use in their own classrooms.
July 18, 19, 20; TWTh - 1:00 - 4:30 p.m.
July 21: F - 9:00 a.m. - 12:00 noon
Room 127, Dooling Hall
Mr. Roy Arlotto and Mr. Dan Charney

CH 563 Chemistry for Elementary and Middle School Teachers: Part II (1 Credit)
Explore the teaching of basic chemical principles through hands-on activities using safe and easily obtained materials. Topics include the periodic table, chemicals and energy, and chemicals and food. Background information will be provided, and participants will be provided with "laboratory" kits for use in their own classrooms.
July 25, 26, 27; TWTh - 1:00 - 4:30 p.m.
July 28: F - 9:00 a.m. - 12:00 noon
Room 127, Dooling Hall
Mr. Roy Arlotto and Mr. Dan Charney

CS 560 BASIC I: Introduction to Computer Programming (1 Credit)
Learn to operate a computer and how to write simple programs. Topics will include variables, graphics, flowcharting, and debugging. No previous computer experience is required.
July 24, 25, 26, 27, MTWTh
1:00 - 4:30 p.m.
Educational Technology Center, Trexler Library
Mrs. Barbara Kautzman

CS 561 Appleworks: Word Processing (1 Credit)
Gain the skills needed to use the Appleworks word processor to manage daily classroom tasks. The workshop will be an in-depth study of the Appleworks word processor. Advanced topics will include subdirectories, quick spell, super fonts, and graphics. No previous computer experience is required.
July 10, 11, 12, 13; MTWTh
1:00 - 4:30 p.m.
Educational Technology Center, Trexler Library
Mrs. Beverly Quigley

CS 562 The MacIntosh as a Tool for Teachers (1 Credit)
An introduction to the use of the MacIntosh computer. Programs to be demonstrated and tried will include MacWrite, MacPaint, clip art, and others. No previous computer experience is required.
July 14, 15; Friday, Saturday
9:00 a.m. - 5:00 p.m.
Educational Technology Center, Trexler Library
Dr. Pat McIntyre

CS 563 An Introduction to the IBM Computer - the MS-DOS Environment (1 Credit)
An introduction to the use of the MS-DOS computer (IBM compatible). Gain experience with booting the system, creating and manipulating files, programming with an editor, and using applications programs. No previous computer experience is required.
July 21, 22; Friday, Saturday
9:00 a.m. - 5:00 p.m.
Academic Computing Center, Dooling Hall
Mrs. Monica Caru

CS 564 Introduction to LOTUS 1-2-3 (1 Credit)
Learn how to build spreadsheets, plot graphs, and use the database capabilities of LOTUS 1-2-3 on an IBM PC. Applications will be taken from education. No previous computer experience is required.
July 7, 8; Friday, Saturday
9:00 a.m. - 5:00 p.m.
Room 107, Dooling Hall
Mr. John Meinke

CS 565 Desktop Publishing (1 Credit)
Learn how to prepare camera-ready materials using "First Publishers." An introduction to desktop publishing in the MS-DOS environment. No previous experience required.
July 14, 15; Friday, Saturday
9:00 a.m. - 5:00 p.m.
Academic Computing Center, Dooling Hall
Mrs. Priscilla D'Annibale

CE 560 The Computer Primer: Instructional Uses for Beginners (1 Credit)
Explore instructional applications of computers. A minimum of twenty-five of the latest programs will be previewed, tried, and discussed. This workshop is recommended for teachers with no prior computer experience.
June 30, July 1; Friday, Saturday
9:00 a.m. - 5:00 p.m.
Educational Technology Center, Trexler Library
Dr. Pat McIntyre

CE 561 Introduction to HyperCard (1 Credit)
Explore the basic elements of HyperCard by preparing original materials and examining existing stacks. You will develop practical applications. An introduction to scripting will be provided. Prerequisite: CS 562 or a working knowledge of the Macintosh.
August 4, 5; Friday, Saturday
9:00 a.m. - 5:00 p.m.
Educational Technology Center, Trexler Library
Dr. June Trudnak

ED 560 Using Television and Films Effectively in the Classroom (1 Credit)
Explore how television and film can be used to study American culture, politics, and ideology; teach higher level thinking skills; develop critical viewing techniques; and build proficiency in visual analysis. Participants will focus on adapting methods to their individual classrooms.
August 11, 12; Friday, Saturday
9:00 a.m. - 5:00 p.m.
Educational Technology Center, Trexler Library
Mrs. Kate Brewer

EN 560 Teaching Writing Across the Curriculum (1 Credit)
A workshop on methods of teaching and evaluating writing in a variety of courses. Emphasis will be on preparation of curriculum units and materials.
July 7, 8; Friday, Saturday
9:00 a.m. - 5:00 p.m.
Room 108, Dooling Hall
Dr. Annette Benert

EN 561 Teaching Library Research Across the Curriculum (1 Credit)
A workshop on teaching students to use reference, periodical, and monograph resources in school and public libraries. Emphasis will be on preparation of curriculum units and materials
July 28, 29; Friday, Saturday
9:00 a.m. - 5:00 p.m.
Room 108, Dooling Hall
Dr. Annette Benert

EN 562 Teaching Poetry in the Schools (1 Credit)
A workshop on teaching secondary students to appreciate poetry and to write their own poems. Emphasis will be on preparation of curriculum units and materials.
July 21, 22; Friday, Saturday
9:00 a.m. - 5:00 p.m.
Room 108, Dooling Hall
Dr. Kenneth Fifer

MA 560 Teaching Secondary Mathematics with Microcomputers (1 Credit)
Explore the use of the microcomputer as a tool for demonstrating concepts, teaching problem solving, graphing functions, and providing drill and practice. Both Apple and IBM computers will be used. No previous computer experience is required.
July 28, 29; Friday, Saturday
9:00 a.m - 5:00 p.m.
Educational Technology Center, Trexler Library
Dr. Karen Doyle Walton

MA 561 Teaching Probability and Statistics in Secondary School (1 Credit)
Explore the teaching of probability and statistics through hands-on experimentation, computer simulations, and mathematical solutions. Both Apple and IBM computers will be used. No previous computer experience is required.
August 18, 19; Friday, Saturday
9:00 a.m. - 5:00 p.m.
Educational Technology Center, Trexler Library
Dr. Karen Walton

Tuition per semester hour $200.00
Deferred Payment Plan available to teachers who are eligible for tuition assistance and/or reimbursement.

Registration materials can be obtained by calling the ACCESS office at (215) 282-4361.

On-campus housing is available. Call Mrs. Linda Zerbe at (215) 282-1100, ext. 286, for details.

Kate Brewer
Educational Technology Center
Allentown College of St. Francis de Sales
Center Valley, PA 18034

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The Educational Technology Center for Teachers

Fall 1989

Allentown College of Saint Francis de Sales

The Educational Technology Center at Allentown College provides inservice opportunities to teachers in the areas of English, mathematics, science, and computer learning and acts as a preview center for educators and other professionals to review and evaluate the latest innovations in computer hardware and software.

The Center at Allentown College was funded by a federal grant to provide teachers in the Lehigh Valley with an additional resource and inservice facility with a focus on the latest in educational technology. The Center has a growing collection of over a thousand instructional programs including video tapes, CD-ROMS, and laser disks. Teachers are welcome to take advantage of the public domain software collections for the Apple, Macintosh, and MS-DOS computers which are available in the Center. (Please bring your own disks.)

Center Hours

8:30 a.m. - 11:00 p.m. Mon.- Thurs.
8:30 a.m. - 9:00 p.m. Friday
8:30 a.m. - 5:00 p.m. Saturday
12:00 p.m. - 11:00 p.m. Sunday

The Center is located on the second floor of the Trexler Library on the Allentown College campus. Teachers and school administrators are welcome; children must be accompanied by an adult.

For more information

Contact Kate Brewer at (215)282-1100 ext. 1362 or write: Allentown College of St. Francis de Sales, Center Valley, PA 18034.

Graduate Programs The College offers Masters of Education degrees in:

Chemistry
Computer Science
Computers in Education
English
Mathematics

Contact Dr. Pat McIntyre at 282- 1100, ext. 1401 for more information.

Tuition per semester hour.....$200.00

Deferred payment plan available to teachers who are eligible for tuition assistance and/or reimbursement.

A $50.00 registration fee must accompany the registration.

Course Cancellation Policy: Workshops are subject to enrollment. If a workshop is cancelled, participants will be notified by phone or mail one week prior to the workshop date. All deposits will be promptly returned.

You may call the Educational Technology Center at 282-1100 extension 1362 for the latest workshop information.

GRADUATE WORKSHOPS

CS 563
An Introduction to the IBM Computer: The MS-DOS Environment
(1 Credit)

An introduction to the use of the MS-DOS computer (IBM compatible). Gain experience with booting the system, creating and manipulating files, programming with an editor, and using applications programs. No previous computer experience is required.

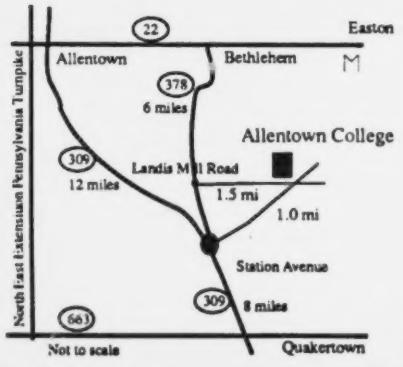
Oct 28 & Nov 4 (Two Saturdays)
9:00 a.m. - 5:00 p.m.
Room 109, Dooling Hall
Mrs. Monica Ceru

CS 564
Introduction to LOTUS 1-2-3
(1 Credit)

Learn how to build spreadsheets, plot graphs, and use the database capabilities of LOTUS 1-2-3 on an IBM PC. Applications will be taken from education. No previous computer experience is required.

Dec 9 & 16 (Two Saturdays)
9:00 a.m. - 5:00 p.m.
Room 109, Dooling Hall
Mr. John Meinke

Allentown College is located in Center Valley which is between Quakertown and Bethlehem on Route 309. If you are traveling North on 309, you would turn right at Station Avenue just before the intersection with Route 378. If you are traveling south, you would come along Route 378 and turn left on Landis Mill Road about three-quarters of a mile before the Route 309 intersection.



CS 566
Desktop Publishing
(1 Credit)

Learn how to use the most popular page layout program for the Macintosh computer: PageMaker. Participants will learn to use all features of the program including master sheets, style guide, graphic placement as well as design features. Prerequisite: CS 562 or a working knowledge of the Macintosh computer.

Dec 2 & 9,(Two Saturdays)
9:00 a.m. - 5:00 p.m.
Educational Technology Center
Trexler Library
Dr. Pat McIntyre

ED 560
Using Television in the Classroom
(1 Credit)

Explore how television can be used to enhance classroom teaching in the areas of social, political, and aesthetic education and at the same time help students develop higher level thinking skills and critical viewing techniques. Participants will focus on adapting methods to their individual classrooms.

Oct 14 & 21 (Two Saturdays)
9:00 a.m. - 5:00 p.m.
Educational Technology Center
Trexler Library
Ms. Kate Brewer

ED 561
Multi-Media Production
(1 Credit)

Learn to produce slide-tape programs for teaching key concepts. Instruction will include use of adjustable cameras, flash, and copy stands as well as guidelines of composition and design. Each participant will produce a presentation for use in his/her own classroom. Presentation will include a demonstration of how slide-tape programs can be converted into video tape format. Each participant will be expected to bring a 35mm camera.

Oct 28 & Nov 11
9:00 a.m. - 5:00 p.m.
Nov 4, 9:00 a.m. - 12:00 noon
Three Saturdays:
Educational Technology Center
Trexler Library
Fr. Robert McGilvray, Ed.D.

CS 562
The MacIntosh as a Tool for Teachers
(1 Credit)

An introduction to the use of the MacIntosh computer. Programs to be demonstrated and tried will include MacWrite, MacPaint, clip art, and others. No previous computer experience is required.

Oct 14 & 21 (Two Saturdays)
9:00 a.m. - 5:00 p.m.
Educational Technology Center
Trexler Library
Dr. Pat McIntyre

EN 560
Teaching Writing Across the Curriculum
(1 Credit)

A workshop on methods of teaching and evaluating writing in a variety of courses. Emphasis will be on preparation of curriculum units and materials.

Oct 28 & Nov 4
(Two Saturdays)
9:00 a.m. - 5:00 p.m.
Room 215, Dooling Hall
Dr. Annette Benert

EN 562
Teaching Poetry in the Schools
(1 Credit)

A workshop on teaching secondary students to appreciate poetry and to wite their own poems. Emphasis will be on preparation of curriculum units and materials.

Nov 11 & 18 (Two Saturdays)
9:00 a.m. - 5:00 p.m.
Room 215, Dooling Hall
Dr. Kenneth Fifer

Allentown College
of Saint Francis de Sales

CENTER VALLEY, PA 18034
(215) 282 - 4361, ext. 1362

REGISTRATION FORM

GRADUATE WORKSHOPS IN EDUCATION

Fall 1989

Name: Mr./Mrs./Ms. _____
First Middle Last

_____
Name under which previous academic records are held

Present Address: _____
Street City State Zip Code

Permanent Address: _____
Street City State Zip Code

School _____ Telephone (Work) _____
Grade Level _____ Telephone (Home) _____
Teaching Assignment _____ Social Security Number _____

Previous Academic Work:

College/University	Dates		Major	Degree or Certification
	From	To		

Are you currently enrolled in any other college or university? Yes ____ No ____
If yes, Name of Institution _____ Program _____

Have you attended Allentown College before? ____ No ____ Yes Student Number: _____

How did you learn about the graduate workshop program for teachers at Allentown College?
____ newspaper ____ mail ____ friend ____ faculty notice ____bulletin board ____ newsletter

Registrations should be returned to:

Kate Brewer
Educational Technology Center
Allentown College of St. Francis de Sales
Center Valley, PA 18034

For Office Use: **Deposit Paid: $_____** **Date: _____**
Student Number: _____ **Date: _____**

WORKSHOP REGISTRATION

Course Code	Course Number	Course Title	Credits	Dates

I certify that the information given on this form is complete and accurate.

I agree to pay the total amount of tuition and fees for the above registered courses and/or workshops to Allentown College of Saint Francis de Sales before the first class, or as agreed upon under the terms and conditions of a separate deferment agreement as approved by the College.

Student Signature _____ Date _____

A NON-REFUNDABLE DEPOSIT OF $50.00 MUST ACCOMPANY THIS REGISTRATION.

GRADUATE STUDENT CONFIDENTIAL TUITION DEFERMENT REQUEST

I, _____, request a tuition deferment in the amount of $ _____

(Only the amount of tuition which can be reimbursed will be deferred) for the graduate workshop(s) which begin(s) on _____ (month/day/year) and end(s) on _____ (month/day/year).

I understand that approval must be given by the Director of the Graduate Program and the Controller of Allentown College for tuition payment to be deferred and that I must provide an explanation for the request for tuition deferment.

Upon payment of my $50.00 tuition deposit, providing my requested tuition deferment is approved, I will, if required, sign a demand note for the amount of the deferred tuition. I understand the demand note carries a $5.00 service charge and .75% interest per month (9% annum, simple interest) will be charged monthly on the unpaid balance of the account. The balance is due upon withdrawal or eight weeks after the completion of the workshop(s), whichever comes first.

I also understand that the tuition deferment is granted in keeping with the policy stated below.

TUITION DEFERMENT POLICY FOR GRADUATE STUDENTS

1. We will permit tuition deferment in the following cases:
   - A. When a student has a government grant, tuition will be deferred until the grant is received from the government. If the grant is insufficient, the difference is due immediately.
   - B. When a student is eligible for tuition reimbursement from his/her employer, written evidence of this eligibility is required from the employer. Only the amount of tuition which can be reimbursed will be deferred. In cases where all reimbursement is contingent upon successful completion of the course(s) and the student fails the course, we will require payment by the student from his/her own funds. If he/she does not pay, he/she will not be permitted to matriculate in any subsequent session until all bills are paid and will be ineligible in the future for tuition deferment of any kind on any grounds.
   - C. When a student negotiates a loan through the government of a bank or other agency, written evidence of the loan is required. Tuition is deferred until the loan money is received.
2. No graduate student will be permitted to register for any session until all bills for all previous sessions are fully paid.

I am eligible for the following tuition assistance/reimbursement:

Federal/State Grant: (specify) _____ Max % Reimbursed _____ %

Employer Reimbursement: (name of company) _____

Student Loan: (name of bank or agency) _____

Signature: _____ Date: _____

Approval: _____ Director of Graduate Program Date _____ Controller Date

Kate Brewer
Educational Technology Center
Allentown College of St. Francis de Sales
Center Valley, PA 18034

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Technology for Teachers

The Educational Technology Center

Spring 1990

Allentown College of Saint Francis de Sales

The Educational Technology Center at Allentown College provides in-service opportunities to teachers in the areas of English, mathematics, science, and computer learning and acts as a preview center for educators and other professionals to review and evaluate the latest innovations in computer hardware and software.

The Center is located on the second floor of the Trexler Library on the Allentown College campus. Teachers and school administrators are welcome; children must be accompanied by an adult.

For more information contact Kate Brewer at (215)282-1100 ext. 1362 or write: Allentown College of St. Francis de Sales, Center Valley, PA 18034.

Center Hours

8:30 a.m. - 11:00 p.m.	**Mon.-Thur.**
8:30 a.m. - 9:00 p.m.	**Friday**
8:30 a.m. - 5:00 p.m.	**Saturday**
12:00 p.m. - 11:00 p.m.	**Sunday**

Graduate Programs

The College offers Masters of Education degrees in:

- Chemistry
- Computer Science
- Computers in Education
- English
- Mathematics

Contact Dr. Pat McIntyre at 282- 1100, ext. 1401 for more information

BI 560
Introduction to the Microbial World
(1 Credit)

In a combination of lectures, labs, and discussions, students will explore the world of microorganisms around us. Topics covered will include: Relationships of bacteria to one another and to other forms of life, special features of bacteria such as heat tolerance and antibiotic production, and the role of microorganisms in ecology and health. A $15 lab fee is required.

Three Saturdays:
March 24 & 31, April 7
9:00 a.m. - 5:00 p.m.
Room 128, Dooling Hall
Dr. Joseph Colosi

MORE . . .

Tuition per graduate semester hour.....$150.00

Deferred payment plan available to teachers who are eligible for tuition assistance and/or reimbursement. There is no additional cost when tuition is paid on time.

A $50.00 registration fee must accompany the registration.

Course Cancellation Policy: Workshops are subject to enrollment. If a workshop is cancelled, participants will be notified by phone or mail two weeks prior to the workshop date. All deposits will be promptly returned.

You may call the Educational Technology Center at 282-1100 extension 1362 for the latest workshop information.

SPRING WORKSHOPS

CS 562
The Macintosh as a Tool for Teachers
(1 Credit)

An introduction to the use of the Macintosh computer. Programs to be demonstrated and tried will include Microsoft Word, MacPaint, clip art, and others. No previous computer experience is required.

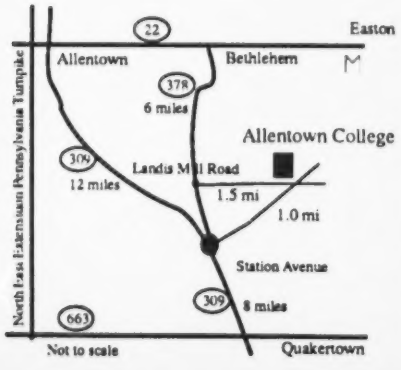
February 17 & 24, (Two Saturdays)
9:00 a.m. - 5:00 p.m.
Educational Technology Center
Trexler Library
Dr. Pat McIntyre

CS 563
An Introduction to the IBM Computer: The MS-DOS Environment
(1 Credit)

An introduction to the use of the MS-DOS computer (IBM compatible). Gain experience with booting the system, creating and manipulating files, programming with an editor, and using applications programs. No previous computer experience is required.

Feb. 3 & 10 (Two Saturdays)
9:00 a.m. - 5:00 p.m.
Room 109, Dooling Hall
Mrs. Monica Ceru

Allentown College is located in Center Valley which is between Quakertown and Bethlehem on Route 309. If you are traveling North on 309, you would turn right at Station Avenue just before the intersection with Route 378. If you are traveling south, you would come along Route 378 and turn left on Landis Mill Road about three-quarters of a mile before the Route 309 intersection.



CS 564
Introduction to LOTUS 1-2-3
(1 Credit)

Learn how to build spreadsheets, plot graphs, and use the database capabilities of LOTUS 1-2-3 on an IBM PC. Applications will be taken from education. No previous computer experience is required.

March 24 & 31 (Two Saturdays)
9:00 a.m. - 5:00 p.m.
Room 109, Dooling Hall
Mr. John Meinke

CS 567
Intoduction to dBASE III PLUS
(1 Credit)

An introduction to Database Management using dBASE III PLUS. Learn how to create, use, sort, search and view a database. In addition, creating reports and computing statistics about the database will be discussed. Familiarity with PC DOS/MS DOS required.

April 21 & 28 (Two Saturdays)
9:00 a.m. - 5:00 p.m.
Room 109, Dooling Hall
Dr. Ashok Kumar

ED 560
Using Television in the Classroom
(1 Credit)

Explore how television can be used to enhance classroom teaching in the areas of social, political, and aesthetic education while developing students' higher level thinking skills. Participants will focus on adapting methods to their individual classrooms.

February 3 & 10, (Two Saturdays)
9:00 a.m. - 5:00 p.m.
Educational Technology Center
Ms. Kate Brewer

ED 561
Multi-Media Production
(1 Credit)

Produce a short video for teaching key concepts of a course or for school promotional purposes. Instruction will include use of adjustable cameras, flash, and copy stands as well as guidelines for composition and program design. Presentations will be done in slide/tape format, then converted to videotape. Each participant will be expected to bring a 35mm camera and a blank VHS videotape.

Three Saturdays:
March 31 & April 21,
9:00a.m. - 5:00 p.m.
April 7, 9:00 a.m. - 12:00 noon
Educational Technology Center
Fr. Robert McGilvray, Ed.D.

CE 562
Desktop Publishing
(1 Credit)

Learn how to use the most popular page layout program for the Macintosh computer: PageMaker. Participants will learn to use all features of the program including master sheets, style guide, graphic placement as well as design features. Prerequisite: CS 562 or a working knowledge of the Macintosh computer.

May 5 & 12, (Two Saturdays)
9:00 a.m. - 5:00 p.m.
Educational Technology Center
Trexler Library
Dr. Pat McIntyre

EN 560
Teaching Writing Across the Curriculum
(1 Credit)

A workshop on methods of teaching and evaluating writing in a variety of courses. Emphasis will be on preparation of curriculum units and materials.

April 21 & 28, (Two Saturdays)
9:00 a.m. - 5:00 p.m.
Room 215, Dooling Hall
Dr. Annette Benert

EN 562
Teaching Poetry in the Schools
(1 Credit)

A workshop on teaching secondary students to appreciate poetry and to write their own poems. Emphasis will be on preparation of curriculum units and materials.

March 24 & 31, (Two Saturdays)
9:00 a.m. - 5:00 p.m.
Room 215, Dooling Hall
Dr. Kenneth Fifer

MA 562
Statistics: Data Analysis and Problem Simulation
(1 Credit)

An overview of descriptive statistics and probability. Topics include analysis of variance and the univariate general linear model. Software packages to be utilized include SPSS-S, MATLAB, and UGLM.

March 3 &10, (Two Saturdays)
9:00 a.m. - 5:00 p.m.
Room 109, Dooling Hall
Dr. William Finley

Allentown College
of Saint Francis de Sales

CENTER VALLEY, PA 18034
(215) 282 - 4361, ext. 1362

REGISTRATION FORM

GRADUATE WORKSHOPS IN EDUCATION

Spring 1990

Name: Mr./Mrs./Ms. _____
First Middle Last

_____
Name under which previous academic records are held

Present Address: _____
Street City State Zip Code

Permanent Address: _____
Street City State Zip Code

School _____ Telephone (Work) _____
Grade Level _____ Telephone (Home) _____
Teaching Assignment _____ Social Security Number _____

Previous Academic Work:

College/University	Dates		Major	Degree or Certification
	From	To		

Are you currently enrolled in any other college or university? Yes ____ No ____
If yes, Name of Institution _____ Program _____

Have you attended Allentown College before? ____ No ____ Yes Student Number: _____

How did you learn about the graduate workshop program for teachers at Allentown College?
____ newspaper ____ mail ____ friend ____ faculty notice ____bulletin board ____ newsletter

Registrations should be returned to:

Kate Brewer
Educational Technology Center
Allentown College of St. Francis de Sales
Center Valley, PA 18034

For Office Use: **Deposit Paid: $_____** **Date: _____**
Student Number: _____ **Date: _____**

WORKSHOP REGISTRATION

Course Code	Course Number	Course Title	Credits	Dates

I certify that the information given on this form is complete and accurate.

I agree to pay the total amount of tuition and fees for the above registered courses and/or workshops to Allentown College of Saint Francis de Sales before the first class, or as agreed upon under the terms and conditions of a separate deferment agreement as approved by the College.

Student Signature _____ Date _____

A NON-REFUNDABLE DEPOSIT OF $50.00 MUST ACCOMPANY THIS REGISTRATION.

GRADUATE STUDENT CONFIDENTIAL TUITION DEFERMENT REQUEST

I, _____, request a tuition deferment in the amount of $ _____
(Only the amount of tuition which can be reimbursed will be deferred) for the graduate workshop(s) which begin(s) on _____ (month/day/year) and end(s) on _____ (month/day/year).

I understand that approval must be given by the Director of the Graduate Program and the Controller of Allentown College for tuition payment to be deferred and that I must provide an explanation for the request for tuition deferment.

Upon payment of my $50.00 tuition deposit, providing my requested tuition deferment is approved, I will, if required, sign a demand note for the amount of the deferred tuition. I understand the demand note carries a $5.00 service charge and .75% interest per month (9% annum, simple interest) will be charged monthly on the unpaid balance of the account. The balance is due upon withdrawal or eight weeks after the completion of the workshop(s), whichever comes first.

I also understand that the tuition deferment is granted in keeping with the policy stated below.

TUITION DEFERMENT POLICY FOR GRADUATE STUDENTS

1. We will permit tuition deferment in the following cases:
   - A. When a student has a government grant, tuition will be deferred until the grant is received from the government. If the grant is insufficient, the difference is due immediately.
   - B. When a student is eligible for tuition reimbursement from his/her employer, written evidence of this eligibility is required from the employer. Only the amount of tuition which can be reimbursed will be deferred. In cases where all reimbursement is contingent upon successful completion of the course(s) and the student fails the course, we will require payment by the student from his/her own funds. If he/she does not pay, he/she will not be permitted to matriculate in any subsequent session until all bills are paid and will be ineligible in the future for tuition deferment of any kind on any grounds.
   - C. When a student negotiates a loan through the government of a bank or other agency, written evidence of the loan is required. Tuition is deferred until the loan money is received.
2. No graduate student will be permitted to register for any session until all bills for all previous sessions are fully paid.

I am eligible for the following tuition assistance/reimbursement:

Employer Reimbursement: (name of company) _____ Max % Reimbursed _____ %

Student Loan: (name of bank or agency) _____

Signature: _____ Date: _____

Approval: _____ _____

Director of Graduate Program Date Controller Date

APPENDIX E

INTERM REPORT

Educational Technology Center
for
Excellence in Mathematics, Science, and Computer Science

Allentown College
of
Saint Francis De Sales

Interim Report

Dr. Pat McIntyre
July 1989

Introduction:

The purpose of this report is to provide to the Advisory Committee of the Educational Technology Center information on the progress of the Center during the six months (January through July 1989) that it has been operational. The report will also provide the visiting evaluation team and the College administration information for their own reviews of the Center's progress.

The report will address the first year goals for the Center as presented in Figure 1 which is the conceptual framework used in the original funding request presented to the Department of Education. The report will use the heading from Figure 1 as guides.

Overview:

The Center for Excellence in Mathematics, Sciences, and Computer Science has been established and integrated into the academic program of Allentown College of Saint Francis de Sales. The major goals of the original proposal have been met, and most of the interim objectives have been reached or exceeded.

It should be noted that the funding cycle proposed in the original funding request had to be modified to meet the funding Department of Education fiscal cycle -- funding began in September 1988 rather than January 1989 as originally proposed -- and the actual funding was less than what was original requested -- $83,310 versus $124,270. The changes to the original plan have been slight, but it seems fair to judge this to be an interim report, and although the funding for the project will terminate in September 1989, the goals set for the Center might more appropriately be evaluated in January 1990 when the Center has been in operation for a full year as per the original schedule.

In any case, the following report suggests that most of the goals have already been met, and the Center is a viable resource for the teachers in the region.

FIRST YEAR GOALS
for
TECHNOLOGY CENTER FOR EXCELLENCE

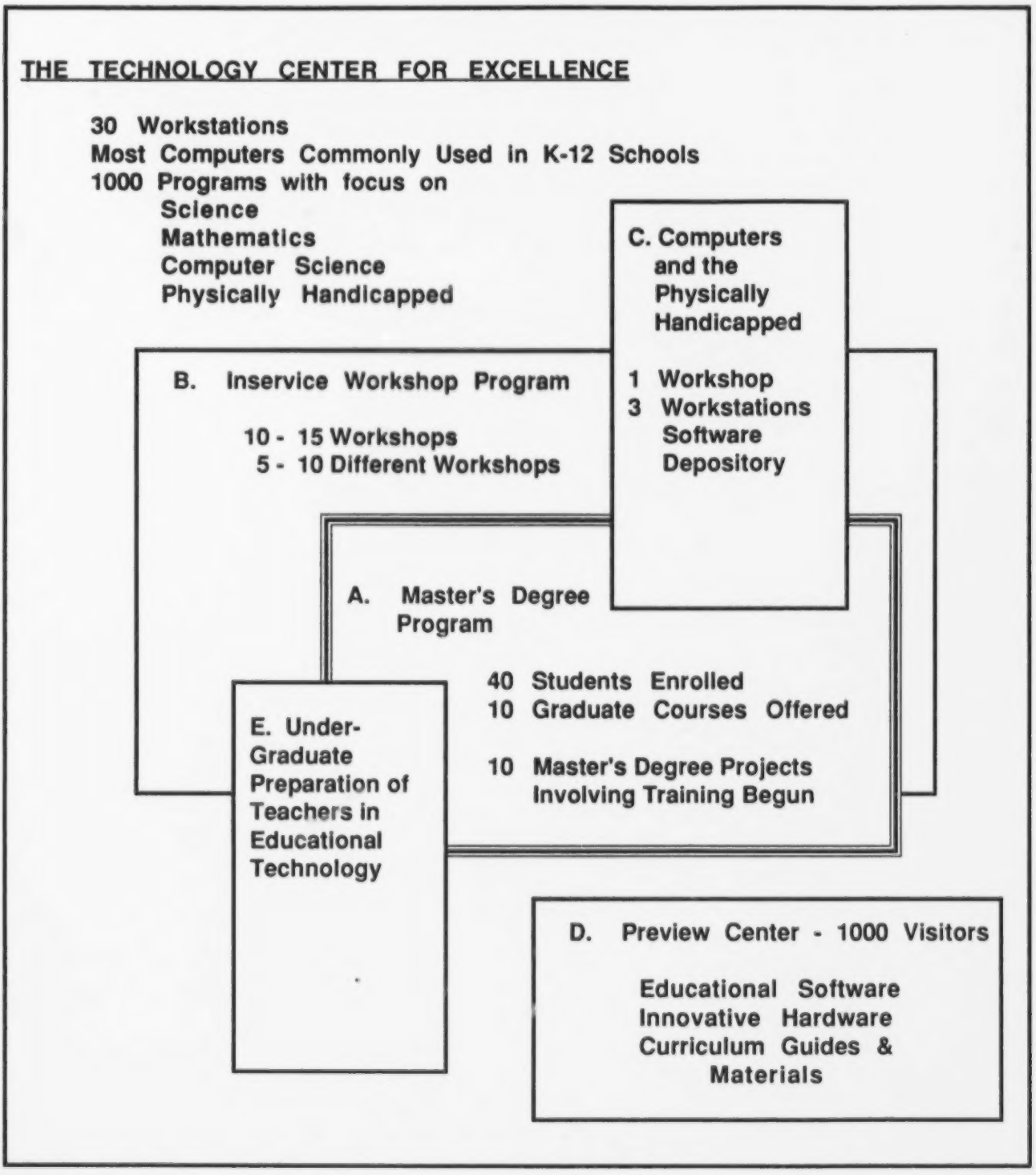


Figure 1:

The Educational Technology Center for Excellence:

The Educational Technology Center for Excellence in Mathematics, Science, and Computer Science occupies a prominent location in the Trexler Library on the campus. The Center is made up of four rooms (3200 square feet) and a storage facility. It includes the preview center with twenty-six workstations, a well-equipped presentation room which seats sixty people, a small work area with room for ten workstations, and a workshop area suitable for thirty participants.

The Center has exceeded the original goal of thirty workstations, and it has included within its collection the most common computers used in the K-12 Schools. The software collection includes over 800 disks, with special emphasis on science, mathematics, computer science and programs for the physically handicapped. The actual number of programs available for preview exceeds the goal of 1000 commercial. The collection continues to grow, and the on-line catalog is beginning to take form.

Although not mentioned in the original proposal as a goal, funding was provided in the budget for public domain collections, and these are in place for the Apple II series, the Macintosh, and IBM-compatible computers. Local teachers are only becoming aware of this valuable resource. The Center hopes to extend its service to local teachers by being identified as a distribution center for the American Chemical Society Project Seraphim software collection. This would allow local teachers to copy software from the collection of over one hundred and fifty disks at no cost.

One difficulty encountered in the establishment of the Center was the inability to obtain part time professional staff to do the many tasks that needed to be done during the startup period of the grant. The most significant sign of the institutionalization of the Center has been the establishment of a professional staff position in the library budget for the position of Center manager. A full-time professional staff member has only been in place in the Center since July 15, 1989. This is a permanent position which is not dependent on outside funding.

During the summer of 1989, all members of the regular library staff received training in the use of the equipment in the Center.

Master's Degree Program:

The College has been approved for the granting of five master's of education degrees, four in the areas related to this project -- Computers in Education, Computer Science, Chemistry and Mathematics. The first students were admitted into the program for the 1989 summer session.

Obtaining approval for the programs from the Pennsylvania Department of Education involved a process which exceeded the anticipated timeline of the original proposal. Final approval was not received until May 1989; the original plan called for approval in March. Although the thorough program review by the state and the valuable input from the visitation team undoubtedly made the program stronger, the delay in being able to provide information to teachers seriously hampered the enrollment for the summer of 1989.

Ten graduate students were admitted to the program prior to June 1989. All ten enrolled for some courses or workshops during the summer, but the total enrollment was far less than originally anticipated. Although six graduate courses were offered, only three graduate courses were actual taught, and enrollment was minimum. The total number of class registrations was eleven. Graduate students enrolled in the workshops that were offered.

The prospectus for the graduate program is much better than the initial registrations might infer. Applications for the program have been requested by at least eighty teachers. At the present time there are five applications pending acceptance, and at least three additional applications that will be forth coming. Present estimates are that thirty-five to forty students will be in the program by the summer of 1990.

In order to provide greater access to the technology that is used in the graduate program, the Center staff has prepared three separate funding proposals to the state of Pennsylvania and the Office of Education for the seeding of an equipment grant which would provide each graduate student with their own personal workstation as part of their graduate work. Funding was denied by the State of Pennsylvania; funding is pending on the two federal grant requests.

Inservice Workshop Program:

The workshop program was delayed by the formal approval process for the graduate program. Although eighteen workshops were proposed for the 1989 summer session, only nine were held. (See attached brochure entitled "Summer School for Teachers.) The limited enrollment may have be due to a variety of reasons, but certainly the lateness of announcement was a significant factor.

The workshops that were held were very favorably received. For the four workshops related to computer education which were evaluated, 72% of the participants rated the workshops as excellent, and 94% rated the instructors as excellent.. (See attached summary of computer workshop evaluations.) Not one workshop or instructor was rated as low as average, or below, by any participant.

The workshop program will continue during the academic year, and there is no foreseeable problem with meeting the goal of providing at least fifteen workshops during the first year of the Center's operation. It will not be possible to generate the detailed workshop guides that were suggested in the proposal until the graduate students become more directly involved in the program through their graduate projects.

It is important that the inservice program grow because it will\ only be through this program that the necessary resources will become available for continuing growth of the Center. The net income from the summer workshops was approximately five thousand dollars.

Computers and the Physically Handicapped:

Progress in this area has been slow, but equipment for the three workstations for demonstrating access for the physically handicapped have been ordered, and should be in place by September 1, 19[illegible]. Some special software for the workstations has been obtained, and the collection will be expanded.

No workshops were developed for teaching computer applications for the physically handicapped, but the program will continue to be explored. Identification of a local teacher to develop the workshop has been the major obstacle.

Two grants were prepared requesting funds for expansion of the depository of adaptive devices and the development of a training program for handicapped individuals in the use of automated library equipment. One proposal was turned down because of its lack of a research base; the other is still pending.

The Preview Center:

The preview center is staffed and operational during the regular hours of Trexler Library. The collection of equipment continues to grow, and the demonstration workstations are slowly taking form. Equipment available to visiting teachers includes CD-ROM data bases, public domain databases, interactive video, laser printers, digital scanners, AppleShare network, etc.

The curriculum library has not grown significantly in the six months of operation, but plans continue for establishing systematic means for acquisition of materials. Materials are presently being cataloged, and venders will be contacted a second time in hopes of gaining their assistance.

Up to this time, the Center has been used almost exclusively by undergraduate and graduate students in the various education programs of the College. It is likely that the local community of teachers are not aware of the resources of the Center. The workshop program has brought more teachers to the Center; additional activities will be undertaken during the 1989-90 school year in hopes of increasing use of the resources.

Undergraduate Preparation of Teachers in Educational Technology:

During the startup period of the Center, classes of undergraduate education students were provided with instruction in the use of various elements of the Center. Units of instruction were included in their regular

classes, and the trend will be to include instruction in the latest technology in all education courses.

The Center has also be used in regular college classes which include major from the spectrum of college programs. One of the most encouraging aspects of the Center operation has been the use of the resources by faculty and staff not directly involved in the preparation of teachers. There are signs that the Center is impacting the utilization of technology across the campus. For the Center to be successful, the technology available in the center should become integrated into the curriculum of the College as well as the curriculum of the schools that are its primary clients.

Educational Technology Center
Allentown College of Saint Francis de Sales

WORKSHOP EVALUATION

WORKSHOP: _____

INSTRUCTOR: _____

Critical to the development of any instructional program is systematic feedback. We hope that you will take the ten minutes or so it takes to complete this form before leaving the workshop. Answer only those questions which apply to your workshop.

It would be very helpful if you would comment on any items that you rate poor or unsatisfactory.

Please place your completed form in the envelop provided. Thank you for your assistance.

CONTENT:	EXCELLENT	GOOD	AVERAGE	POOR	UNSATISFACTORY
Topics Presented	❒	❒	❒	❒	❒
Quality of Information	❒	❒	❒	❒	❒
Quantity of Information	❒	❒	❒	❒	❒
Usefulness of Information	❒	❒	❒	❒	❒
Software	❒	❒	❒	❒	❒
Handouts	❒	❒	❒	❒	❒

COMMENTS or SUGGESTIONS:

FACILITY:					
Classroom	❒	❒	❒	❒	❒
Computers	❒	❒	❒	❒	❒
Printers	❒	❒	❒	❒	❒
Peripheral	❒	❒	❒	❒	❒

COMMENTS or SUGGESTIONS:

INSTRUCTION:	EXCELLENT	GOOD	AVERAGE	POOR	UNSATISFACTORY
Objectives	❒	❒	❒	❒	❒
Level	❒	❒	❒	❒	❒
Clarity of Presentation	❒	❒	❒	❒	❒
Overall Organization	❒	❒	❒	❒	❒
Ratio of Class Time to Lab	❒	❒	❒	❒	❒
Ratio of Lecture to Discussion	❒	❒	❒	❒	❒
Laboratory Sessions	❒	❒	❒	❒	❒
Audiovisual Materials	❒	❒	❒	❒	❒
Assignments	❒	❒	❒	❒	❒

COMMENTS or SUGGESTIONS:

INSTRUCTOR:					
Knowledge	❒	❒	❒	❒	❒
Preparation	❒	❒	❒	❒	❒
Friendliness	❒	❒	❒	❒	❒
Concern for Students	❒	❒	❒	❒	❒
Enthusiasm	❒	❒	❒	❒	❒

COMMENTS or SUGGESTIONS:

OVERALL I WOULD RATE THIS WORKSHOP AS	❒	❒	❒	❒	❒

COMMENTS or SUGGESTIONS:

OVERALL I WOULD RATE THE INSTRUCTOR AS	❒	❒	❒	❒	❒

COMMENTS or SUGGESTIONS:

SUMMARY DATA FROM PARTICIPANT EVALUATIONS
SUMMER SCHOOL
1989
COMPUTER WORKSHOPS

	EXCELLENT	GOOD	AVERAGE	POOR	UNSATISFACTORY
			CONTENT		
TOPICS	38	12	0	0	0
QUALITY	43	7	0	0	0
QUANTITY	36	14	0	0	0
USEFULNESS	35	12	3	0	0
SOFTWARE	34	14	1	0	0
HARDWARE	36	12	2	0	0
SUBTOTAL	**222**	**71**	**6**	**0**	**0**
			FACILITY		
CLASSROOM	27	18	3	1	0
COMPUTERS	31	16	3	0	0
PRINTERS	22	8	1	0	0
PERIPHERALS	18	9	4	0	0
SUBTOTAL	**98**	**51**	**11**	**1**	**0**
			INSTRUCTION		
OBJECTIVES	39	10	0	0	0
LEVEL	31	15	1	0	0
CLARITY	35	13	0	0	0
ORGANIZATION	32	15	0	0	0
CLASS/LAB	32	13	2	0	0
LECTURE/DISC	28	16	3	0	0
LAB	37	8	0	0	0
AUDIOVISUAL	32	11	1	0	0
ASSIGNMENTS	24	16	2	0	0
SUBTOTAL	**290**	**117**	**9**	**0**	**0**
			INSTRUCTOR		
KNOWLEDGE	45	4	0	0	0
PREPARATION	42	7	0	0	0
FRIENDLINESS	48	1	0	0	0
CONCERN	48	1	0	0	0
ENTHUSIASM	48	1	0	0	0
SUBTOTAL	**231**	**14**	**0**	**0**	**0**
COURSE	39	11	0	0	0
INSTRUCTOR	47	2	0	0	0

APPENDIX F

SITE VISIT EVALUATION REPORT

READING SCHOOL DISTRICT
Department of Mathematics
800 Washington Street, Reading, Pennsylvania 19601-3691
Phone: (215) 371-5636

January 29, 1989

Dr. Karen Doyle Walton
Academic Dean
Allentown College
Center Valley, PA 18034

Dear Dr. Walton,

Thank you for inviting me to attend Allentown College to evaluate the related components of your Center for Academic Excellence in Mathematics, Science, and Computer Learning. The other members of the evaluation team, Dr. Harold Bailey and Dr. Charles Brennan, and I were impressed with the overall beauty of your campus; moreover, your advanced preparation for our arrival and subsequent tasks coupled with gracious hosting made our visit both educationally rewarding and personally enjoyable.

At the conclusion of our verbal remarks to your Advisory Committee, we met to tie together, as it were, our individual thoughts, comments and overall suggestions relative to that which was gleaned from the day's visit.

As the "reporter designate" of the evaluation team, I am pleased to outline the following for your review:

Project Strengths:

- The Project Director

  o Dr. Patrick McIntyre's credentials and experience relative to the goals and objectives of the project are outstanding. It is evident that the strong base of his previous projects can be transfered to the Allentown College Project thus eliminating the need for "reinventing the wheel."

  o His enthusiasm for the project will prove to be extremely beneficial during that phase of the project related to obtaining school district/teacher involvement.

  o The project proposal was very well written.

- Support of the Academic Dean

  o Dr. Karen Doyle Walton's dual role as the Academic Dean and active participant in the design/implementation of the project provides a unique potential for the growth and success of the project given her extensive mathematics and computer science background.

Project Strengths (continued):

- Project Concept

  - o Excellent "blend" of Technology, Education, and Content. Participants will learn to utilize computer technology as a tool to enhance respective curricula.

  - o The philosophy of the Center for Academic Excellence provides a method to learn content in an "integrated mode" rather than in an "isolated mode."

  - o The training of trainers component will probably promote expansion of that which is learned by the teacher participants and, hence, support project continuation.

  - o The addition of a component relative to the needs of the physically handicapped is especially noteworthy in light of the fact that, for them, technology and its ever-increasing sophistication can be the vehicle for an improved, interactive and purposeful life.

- The Trexler Library

  - o The selection of the Trexler Library for the location of the Center was an excellent choice, for it is both esthetically pleasing and architectually commensurate with the needs of the project.

  - o The fact that the Director of the Trexler Library is Mrs. Joan McIntyre, the wife of the Project Director, Dr. McIntyre, is a definite "plus" because communication with respect to utilization of the Center will always be at maximum.

  - o Accessibility to the software which is researched and/or developed via the project will provide proper utilization by the participants and, hopefully, promote increased research.

- Proposed Undergraduate Preparation of Teachers in Educational Technology

- Proposed Graduate Programs in Computers in Education and Computer Science

  - o The Center will be a focal point for preservice and inservice training.

Project Concerns:

- Initial Phase Cost-Effectiveness

  - o Depending on the number of participants and workshops offered, the managerial/teaching load of the Director of the Center must be carefully monitored.

Project Concerns (continued):

- Plans for Continued Financial Support

  - Teacher participants may indicate needs which require more extensive hardware/software additions and specialized workshops.

Recommendations:

- That Dr. McIntyre should devote one-half of his time to the Project during its duration.

- That, in addition to providing promotional materials, the Inservice Coordinator, with the assistance of Dr. McIntyre, should continue to seek grant monies and other funding such as local support from business/industry. An excellent model for obtaining local funding is the Reading School District's New Futures Project. Information on this project can be obtained from Dr. James E. Henderson, Superintendent of Schools.

- That more emphasis should be placed on multi-media applications of technology.

- That the Center should be "linked" to existing Educational Networks.

- That any software researched/developed/catalogued should be made available to school districts within the 50 mile radius of the Center. This would be a great promotional technique.

- That Dr. McIntyre should become "highly visible" within the 50 mile radius of the Center via professional conferences and visitations to school districts. He should utilize his excellent writing style to present the model for the Center in technology publications.

- That graduate-level instruction not be limited to Ph.D.'s.

I trust that the above items will be helpful to your project. I have sent a copy of this report to Drs. Bailey and Brennan suggesting that, in the event I have not represented them as per our last discussion, they should advise me, and I will ammend accordingly.

I am looking forward to our second meeting this Summer.

Sincerely,

J. E. Gattone

Jeffrey E. Gattone
Director of Mathematics

JEG:ra

READING SCHOOL DISTRICT
Department of Mathematics
800 Washington Street, Reading, Pennsylvania 19601-3691
Phone: (215) 371-5636

August 7, 1989

Dr. Karen Doyle Walton
Academic Dean
Allentown College
Center Valley, PA 18034

Dear Dr. Walton,

On Tuesday, August 1, 1989, Dr. Harold Bailey, Dr. Charles Brennan and I converged again on your beautiful campus to review the progress being made with respect to your Educational Technology Center for Excellence in Mathematics, Science, and Computer Science.

Dr. Patrick McIntyre provided us with an excellent mental set for our day's task by outlining, point-by-point, the Interim Report of the Educational Center and by describing the components of Allentown College's recently-approved Graduate Programs in Education.

Upon completion of those overviews, Dr. McIntyre accompanied the three of us on a tour of the rooms where the computer hardware and other related instructional technology is located and then graciously allowed us to "steal" some of his instructional time from the graduate course he was teaching in the afternoon. Our visit with his students was both interesting and informative.

In addition to the visit with his graduate students, we met with Mrs. Kate Brewer, the full-time manager of the Technology Center.

Based on the discussions and visitations described above and on the review of the recommendations made in January, 1989, we agreed on the following closure remarks/recommendations:

- In a relatively short time, your Educational Center is on a smoothly-running basis. Its location presents a relaxed yet academic atmosphere which is conducive to learning, and its physical configuration -- the preview center with twenty-six workstations, the presentation room which seat sixty people, the small work area with room for ten workstations, and the workshop area suitable for thirty people -- provides for excellent interactive computer (and other technology) applications from the single student working on a project to large or small group instruction.

- We observed that Dr. McIntyre's enthusiam for the project is even greater than that which we observed in January, 1989, and the fact that he is writing other grant proposals to further support the Center is commendable. He clearly has a firm grasp on the growth potential of the Center.

- The five Graduate Programs in Education are well-designed; moreover, we are extremely pleased that they are truly teacher-oriented, that is, they provide the teacher participants with a classroom-based focus toward definite applications in education while simultaneously building strong content knowledge.

- Efforts are being made to promote multi-media applications, and we believe that, as the Graduate Programs grow in relation to the needs, actual or perceived, of the participants, these applications will become more clearly defined.

- In light of Act 178 (Pennsylvania Department of Education staff development requirements), we believe that a needs assessment of the school districts within the Allentown College area should be taken. Such a needs assessment may prove helpful as you monitor and adjust course offerings, workshops, etc. In addition, the needs assessment may prove to be an excellent promotional instrument for your Center and for your Graduate Programs.

- Four of the five Graduate Programs -- Chemistry, Computers in Education, Computer Science, and Mathematics -- will, alone, account for the major utilization of and the justification for the Educational Center, and, of course, we know that students pursuing the degree in English will find the Center a valuable resource for word processing, desktop publishing, etc.

- Dr. McIntyre's students were very positive about both the level of instruction and the graduate program itself. One concern, however, expressed by the students was the infrequency of course offerings. We fully-realize that such offerings are a function of budgetary constraints; however, we suggest that consideration be given to increasing the opportunities for teachers to take courses. Some possibilities may include evening courses during the year (one evening per week, three credit hours for fifteen weeks), two summer sessions each four weeks in length, etc. Increased opportunities coupled with your fine program of workshops yielding one to three credits should prove helpful as the Graduate Programs grow in popularity.

- We were pleased to learn that Allentown College has made plans to fund the Center when the current grant ends, and that a similar commitment has been made to support the Graduate Programs during the beginning "lean years."

- Mrs. Kate Brewer provided us with excellent commentary with respect to her duties as the full-time manager of the Center. She is well-versed in her area, and we noted that she will be teaching a graduate workshop (Using Television and Films effectively in the Classroom). When asked for suggestions about how she could be even more helpful, she commented that she would like to be involved in the budgeting process for the Center. We believe that such "partial ownership" will prove beneficial. She also suggested that a "merging" of the Audio-Visual and the Computer components of the Library would prove to be more effective.

As the "reporter designate" of our team, I am pleased to comment on the progress being made at Allentown College. There is a obviously a strong commitment to the program in which we were fortunate to play a small part.

As the three of us were preparing to leave your campus, we agreed that at some future date, we would enjoy returning to Allentown College to observe your programs in "full bloom."

We wish you great success in your future educational endeavors.

Sincerely,

J. E. Gattone

Jeffrey E. Gattone

cc: Dr. Harold Bailey
Dr. Charles Brennan